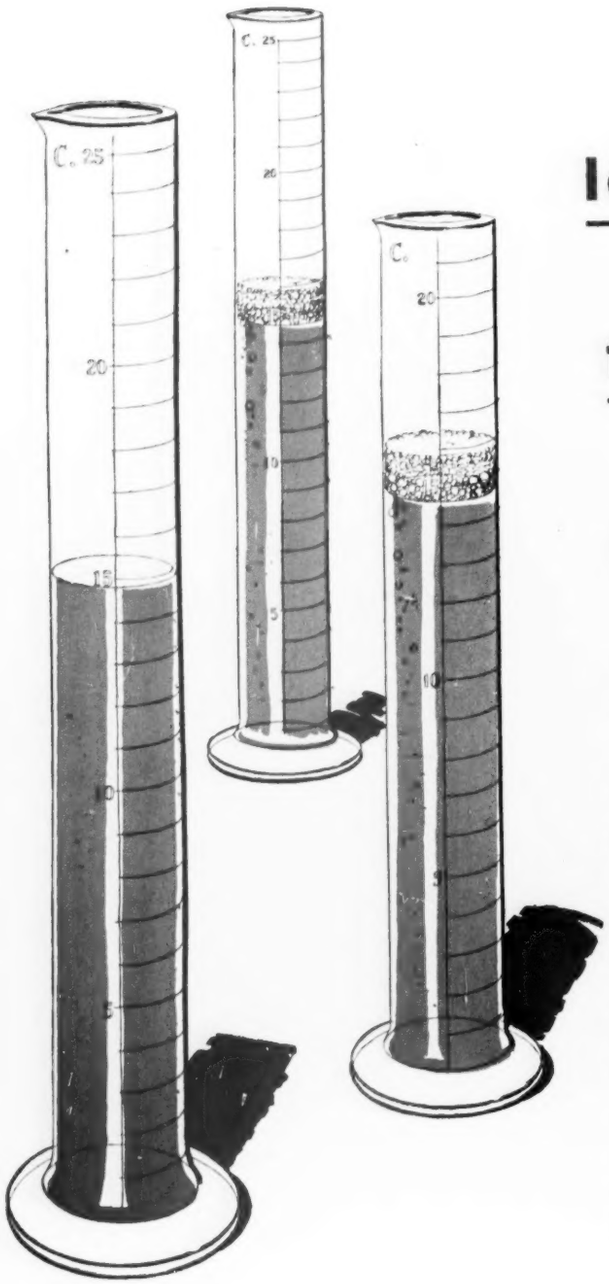
THE PRODUCTION AND MANAGEMENT JOURNAL OF THE NORTH AMERICAN PULP AND PAPER INDUSTRY

PULP & PAPER

Travelers Are Stopped Here—But Pulp Flows Freely

In this issue—PULP & PAPER'S own On-the-Spot story of International Falls (USA) Mill (above) and Ft. Frances (Canada) Mill (this side of International Bridge). Traveling bridge also carries groundwood to Canada, carries pulp to USA. A father-son team heads M & O—PRES. J. S. PAGORE (at left) and EXEC. VICE PRES. ROBT. PAGORE



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Some mills prefer the high-sizing efficiency of a fortified size . . . some find a standard size works out best under their particular operating conditions . . . some find a dark size perfectly suitable.

But most mills find operating economy in the low foaming characteristic of Cyanamid rosin sizes.

Many mills have long benefited by this Cyanamid development – offered first in our ACCOBRITE® Rosin Size, and most recently in CYFOR® Fortified Rosin Size and FF Dark Rosin Size.

Take advantage of the selection offered you. Call our technical representative now to help you select the *right* size to suit your needs . . . and get the added advantage of *low foaming*.

CYFOR Fortified Rosin Size – in many mills low foaming CYFOR has produced higher sizing results at lower cost . . . reducing size consumption as much as 50% over standard sizes.

ACCOBRITE Rosin Size – preferred under some production conditions for sizing efficiency; gives high whiteness, little drop-off in brightness on aging with no foaming problems.

FF Nonfoaming Dark Rosin Size – ideal for kraft and paperboard furnishes where whiteness is not as important as economy and freedom from foaming.

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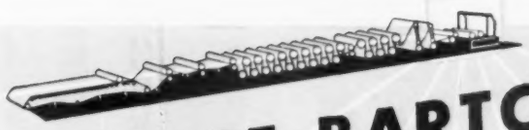

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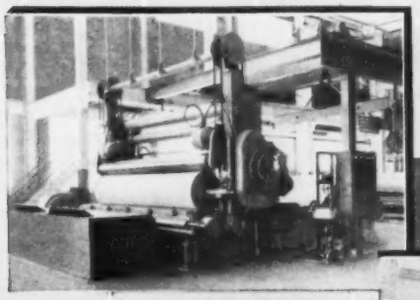

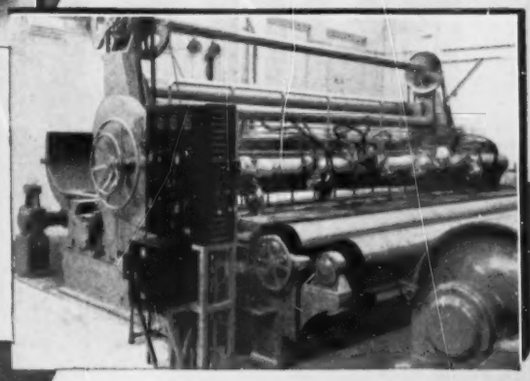

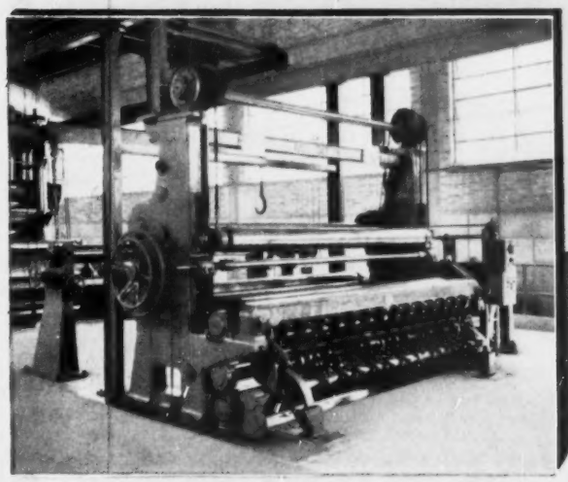

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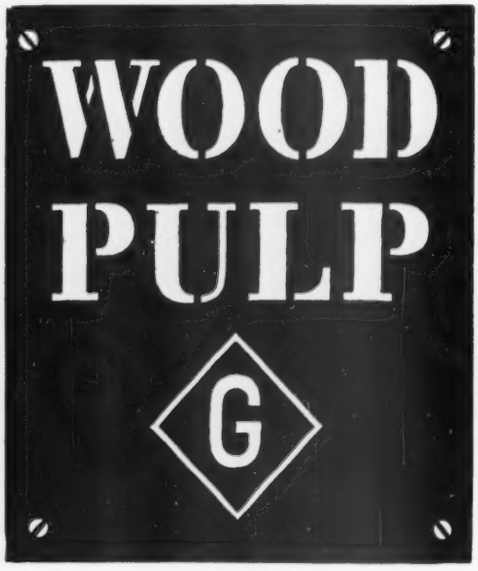

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PULP & PAPER

Production and Management Magazine of the Industry

December 1953
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COMMENT

Advice to Americans—at Montreal Engineers Conference

A big majority of those at Tappi's dinner at the Montreal Engineering Conference were guests from south of the border. Some of them might have squirmed in their seats when the elderly after-dinner speaker emphatically called for lowering of U.S. tariffs, ominously warned that the U.S. is running "short of raw materials" and its forests are becoming "thin."

But, it will be news to him that the U.S.A. today is growing more trees than it did 25 years ago. That most unbiased observers think its forestry practices generally are superior to those in Canada. And, as for other resources—that more oil is being produced in the U.S.A. every year, and likewise more oil resources are being developed.

Surely, the good doctor must have known that when this country lifted the tariff completely on Canadian newsprint, thereby losing most of its newsprint industry 42 years ago, some of those who were around then say that Canada did not live up to a bargain. There is still a duty on any U.S. newsprint that might be shipped to Canada.

Now, Canada's fine paper and book paper mills have been growing rapidly. Some 60 percent in a decade. There is quite a lot heard from north of the border about the desirability of lowering U.S. tariffs on these grades. But the Canadian industry is, officially, opposed to lowering the Canadian tariffs on the same grades.

It no doubt will surprise many Americans, as well as Canadians, to know that today the U.S. is one of the *low* tariff countries of the world. A big share of the lowering has been done at the expense of the paper industry.

There may be further adjustments, but it is well to remember that every fraction of a point of tariff, too hastily dealt with, could imperil the lives and jobs of thousands of paper mill employes and dependents.

Yes—even some of those engineers who were listening to the dinner speaker in Montreal.

But that dinner speaker is really a good guy. He apologized at the end of his speech for being such a scold. It was just something he wanted to get off his chest.

Well, this is just something we wanted to get off our chest, too.

But even more important, we think, are the *common interests* and *common problems* of the whole North American pulp and paper industry. We have an associate editor and a big readership in Canada and are proud to be a North American magazine. This industry, on both sides of that border, should have the *North American* viewpoint.

Time for U.S. and Canada to Look to New Markets

As for pulp and paper, the U.S.A. is doing right well by Canada.

Over 4,800,000 tons of duty-free newsprint came into the U.S.A. last year—four-fifths of all that Canada made. This is nine times what Canada sells the rest of the world. Twice what U.S. imported before World War II.

About one-eighth of all the woodpulp Canada makes also comes in duty-free. U.S. takes most of what Canada makes for sale.

But, meanwhile, North America has become the dominant factor in world woodpulp trade. The rest of the world is increasingly looking toward North America for forest products. Prices for woodpulp on world markets are attractive—conversely, that means North American producers have less cause to fear price-cutting competition at home.

The time has come for U.S.A. and Canada to give less thought to trying to cut into each other's home markets, to put it bluntly. Why not join together in looking to more overseas markets for both—where paper and pulp consumption is many times lower than here?

(For more information on these new developments, see *World Pulp Trends*, PULP & PAPER's 1953 WORLD REVIEW NUMBER, page 25, and *The Changing Pulp World*, PULP & PAPER's Nov. 1953 issue, page 56).

Mark This Date

Better get your reservation in early.

Paper Week in New York City, bringing over 4,000 industry executives, salesmen, engineers, technicians and suppliers to mid-Manhattan every winter, begins on Sunday, Feb. 14. Only a few meetings in the Waldorf that day, but the other rings of the big show get into action Monday and Tuesday, there and at the Commodore.

It is still reputedly the biggest regular annual convention in New York next to the newspaper publishers.

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PUMPING 10%-17% PULP

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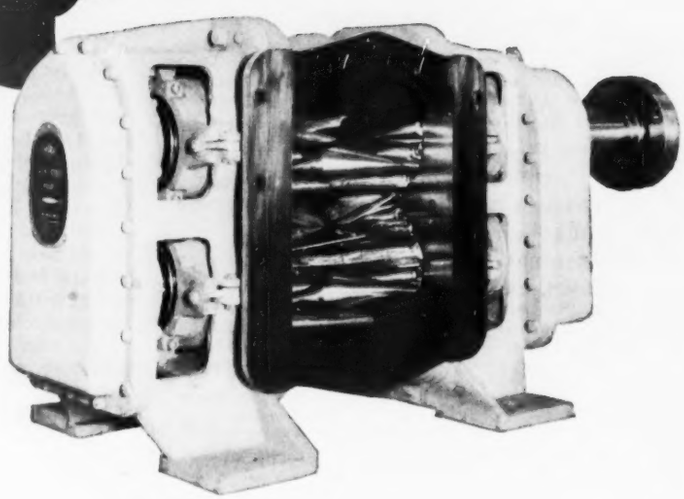


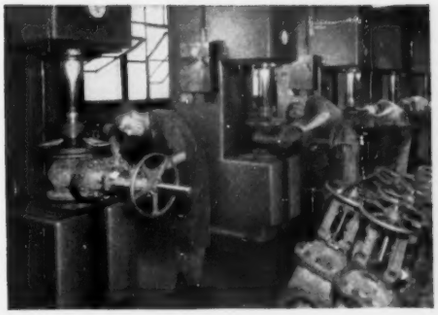
This unit is a positive displacement type pump specifically designed to handle pulps at high densities. The conical profile of its synchronous rotors permits the pumping of stock at densities above 10% A.D.—with lowest horsepower per ton—and no fibre damage. Truly the modern way to handle all types of pulp.

***Tons per day**

IMPROVED MACHINERY INC. J-35

NASHUA, NEW HAMPSHIRE

Sherbrooke Machineries Limited manufacture similar equipment in Canada.



The Finishing Touch

Small details can make a big difference in trimming a tree . . . and in manufacturing valves. For example, *every* Powell Valve part must pass *rigid inspection*. Then, as a final, finishing touch, each Powell Valve is subjected to *actual line tests*.

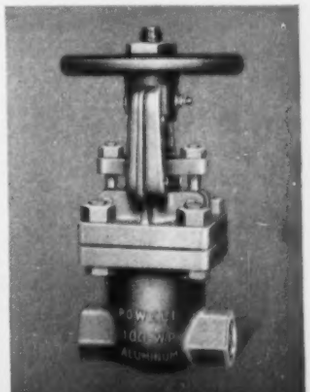
It's these seemingly small details that have helped Powell Valves maintain their record of dependability since 1846. Powell has probably done more valve research, solved more valve problems, and makes more types of valves than any other organization in the world.

With Powell Valves on the job in your plant, you'll say every day's a holiday from flow control worries. Following are just a few of the valves that have the gift of dependable service you want—and need. They're available through distributors in principal cities. If a distributor is not located near you, just write us. We'll be pleased to tell you more about these valves—and our complete line.

STAINLESS STEEL O.S. & Y. "Y" VALVE *(Fig. 1944)* for 150 pounds W.P. at 500 F. The stem is threaded, guided and rises through a bronze bushing in the upper yoke. Made with flanged ends only, with flange dimensions conforming to MSS SP-42. Sizes 2½" to 12", inclusive.

STAINLESS ALLOY GLOBE VALVE *(Fig. 1861)* for 200 pounds W.P. at 500 F. Union bonnet, screwed ends. Sizes ¼" to 2", inclusive. Sizes 2½" and 3" furnished with bolted flanged bonnet.

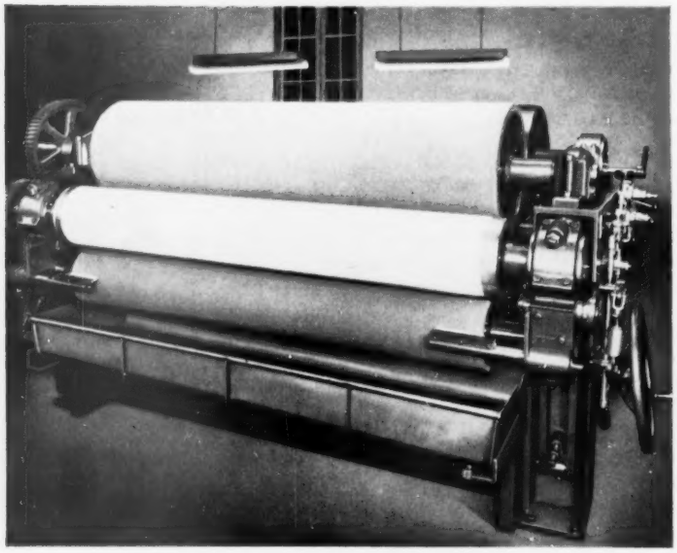
ALUMINUM O.S. & Y. GATE VALVE *(Fig. 2442)* for 100 pounds W.P. at 350 F. Type 304 or 18-8 Stainless Steel stem and interchangeable solid or double wedges. Sizes ¼" to 2", inclusive.



P V

Egan

OFFSET GRAVURE PRINT COATER



Designed for use in paper machine groups, the Offset Gravure Print Coater, clay-coats paper and paperboard at full paper machine speeds.

The end product is used in quality printed magazines and printed paperboard containers.

Send for pamphlets on coating, treating and laminating

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THE EXCEPTIONAL SPEED of the improved *Streambarker* actually *paces* subsequent paper mill operations . . . increases production and lowers costs by keeping a steady stream of cleanly barked logs flowing through your mill.

In the *Streambarker,* revolving logs traveling end to end pass under adjustable hydraulic jets. A high velocity water pattern removes bark quickly and completely by erosive action. Any reasonably round log measuring from 48 to 100 inches in length and from 4 to 24 inches in diameter can be processed. Approximately 95% of all logs can be thoroughly cleaned in a single pass.

Production records prove the *Streambarker's* speed. Reasonably round, straight oak, ash, gum, hackberry and cottonwood are being barked at the rate of over 6000 lineal feet per hour — southern pine at a remarkable 9000 lineal feet per hour.

A-4021

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Ratochlor units in F & P Hatboro plant awaiting inspection and test ***with chlorine*** under actual operating conditions.

Offering complete simplicity of operation and freedom from maintenance problems, the new F & P chlorinator automatically assures maximum water economy over an extra wide flow range.

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OK Knives are made of the finest alloy steel specially hardened to stand the heaviest cutting, while still retaining an ultra keen edge.

OK SUPER paper trimming knives are beveled and hardened for practically all types of cutting. For unusually tough jobs like trimming aluminum foil, film, cellophane, glued board, plywood, etc., these knives are available in special bevels and hardnesses.

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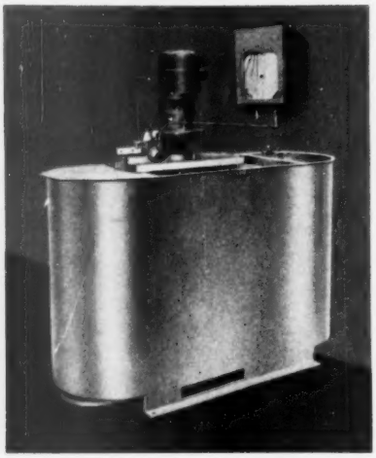

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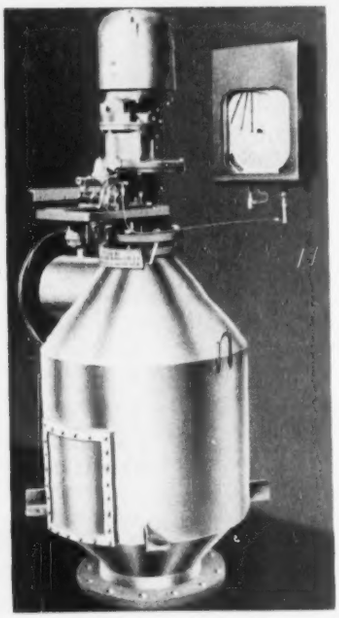

3 VERSATILE TYPES

STUFF-BOX TYPE (Above)

The ideal regulator for basis weight control. Sets new standards of accuracy. Wide range of box designs to fit every requirement.

PAN TYPE (Above left)

Installed directly after washers, deckers, save-alls, etc., to make their operation fully-automatic. Regulates gravity-flow to chest without pumping. Saves cost of extra chests and pumps. Shower water is controlled by regulator.

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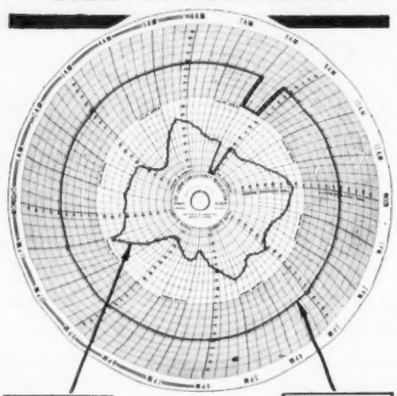

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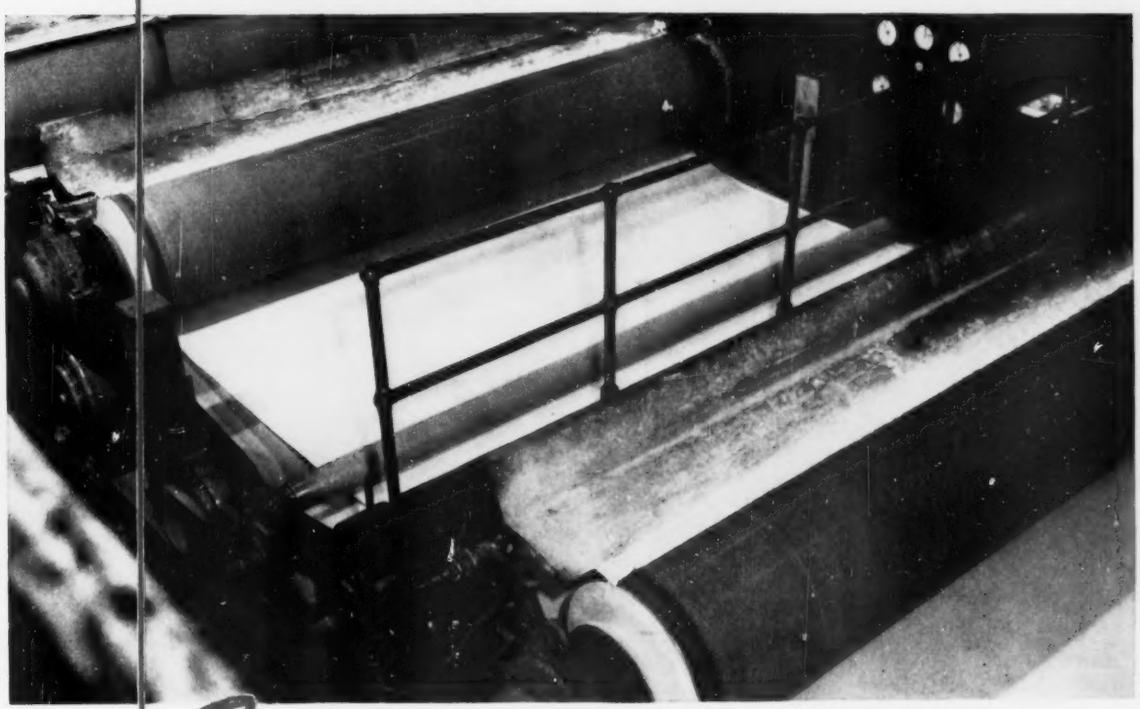

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Scrolls for the Emperor

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Today the pulp and paper industry is one of the major consumers of Sulphur, taking about 400,000 long tons annually. Compounds of Sulphur are indispensable reagents in the two major cooking processes for converting wood to pulp. From the pulp come newspapers, magazines, books, boxes, wrappings and an almost endless list of other paper products.

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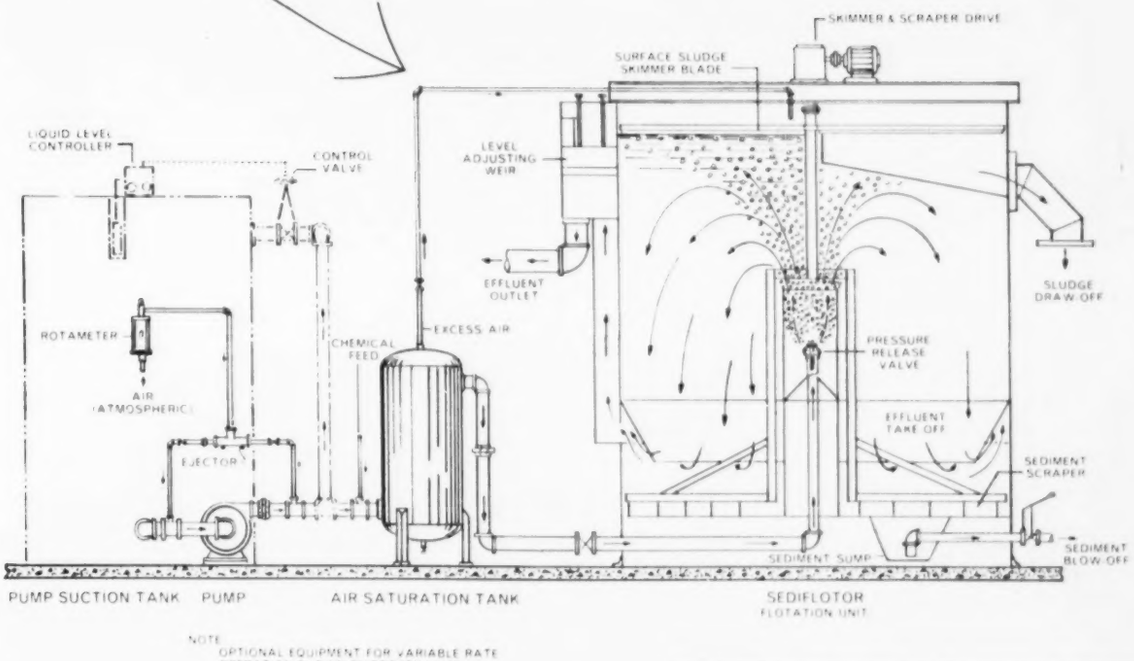

NOTE
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TITLE _____

COMPANY _____

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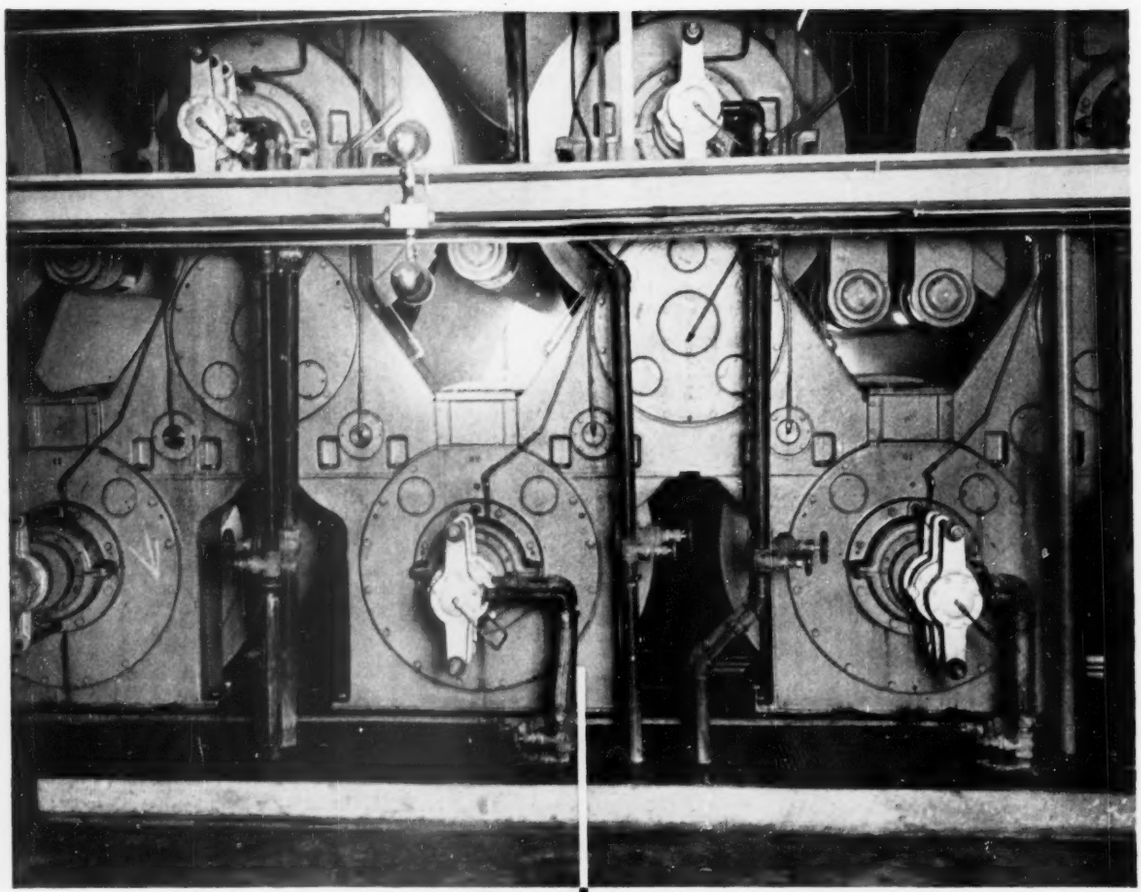


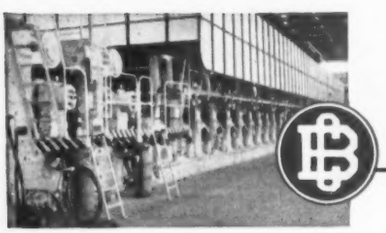
Streamlined **DRIVE SIDE DRYER FRAMES**

This recently installed Black-Clawson machine introduces an interesting new type drive side dryer frame.

All parts jigged for machining, assuring perfect joints and interchangeability of parts. No vertical joints hence no oil leakage onto the sheet.

Those two advantages, and a dozen others of like importance, make this new type construction a positive standout.

Detailed description upon request.



BLACK-CLAWSON

THE BLACK-CLAWSON COMPANY • HAMILTON, OHIO

Recipe for service

Begin with a good company, add liberal quantities of technical skill and the will to serve. Flavor with specially trained sales representatives, and informative advertising. Mix well with experience for nearly 50 years. This formula has made Bolton products and service outstanding in the pulp and paper industry.

BOLTON

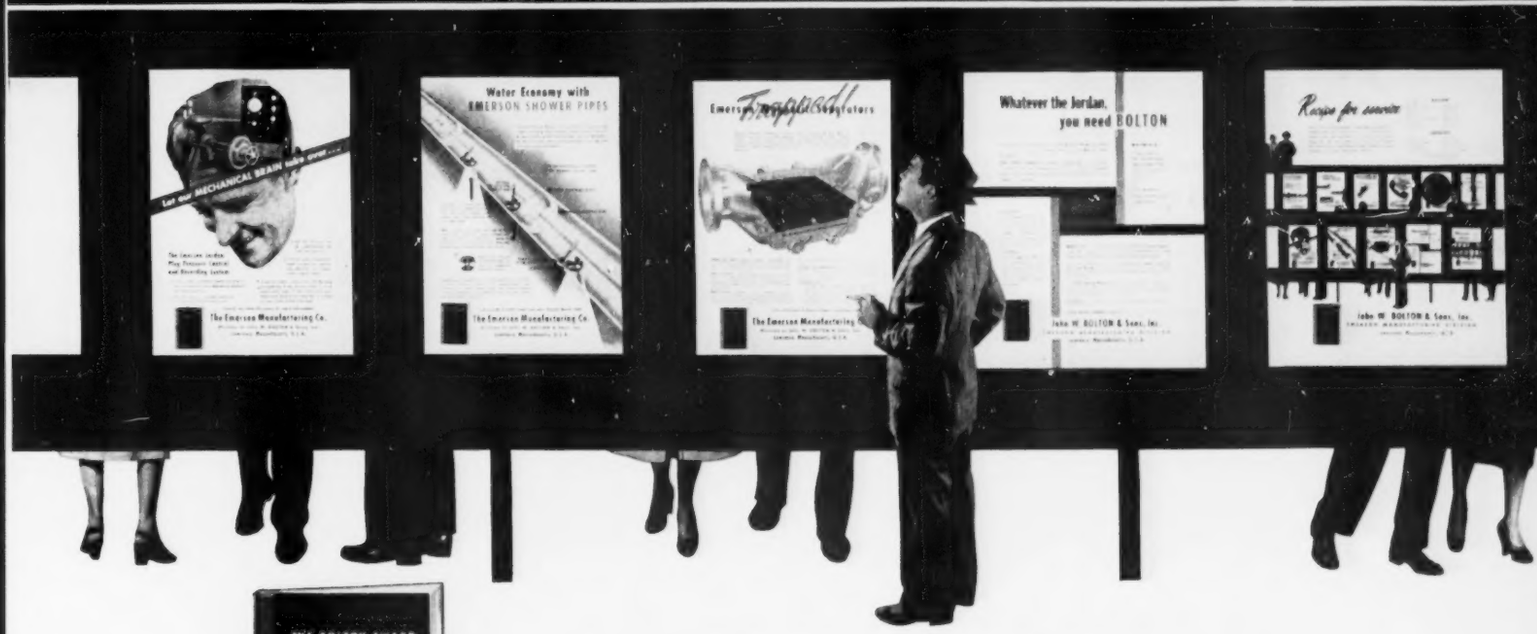
Ring Type Plug Fillings	Chipper Knives
Hydro Truss Shell Fillings	Rag Knives
	Hog Knives
Beater Bars and Woods	Barker Knives
Bed Plates	Sheeter Knives
Paper Knives	Rotary Knives

EMERSON

Jordans	Magnetic Separators
Wedgeless Plugs	Shower Pipes
Stainless Steel Jacketed Plugs	Suction Box Covers
	Pin-Type Couplings

Jordan Plug Pressure Controls and Recording Systems

How • BOLTON Quality serves the Paper Industry
• BOLTON Fillings last longer in any Jordan
Knives are everlastingly locked in • BOLTON Wedgeless Plugs


Let our MECHANICAL BRAIN take over
Water Economy with EMERSON SHOWER PIPES
Whatever the Jordan, you need BOLTON
Recipe for service

John W. BOLTON & Sons, Inc.

EMERSON MANUFACTURING DIVISION

Lawrence, Massachusetts, U. S. A.

Quick Check List

OF INSTRUMENTS BY FOXBORO

Reg. U. S. Pat. Off.

INDICATORS • RECORDERS • CONTROLLERS

***Conductivity**

***Consistency**

Density (Specific Gravity)
differential pressure type

Flow
mercury-manometer type
"d/p Cell", force-balance transmitter type
float-and-cable type

Humidity
wet-and-dry-bulb temperature
relative humidity (hygroscopic type)
absolute humidity and dew point temperature ("Dewcel")

Liquid Level or Interface (in open or pressured vessels)
diaphragm type
bubble tube (purge) type
differential pressure type

***Load, Force, and Torque**

***Moisture Content (sheeted materials)**

Motion and Position Recorders

***Motor Load (Power)**

Operation Time Recorders

***Oxidation—Reduction Potential**

***pH (with Beckman glass electrodes)**

Pressure, Absolute Pressure, and Vacuum
spring and hydron types
differential type
*electric pressure cell types

***Resistance (Electric)**

***Speed (R.P.M. or Lineal)**

Temperature
filled-system types
resistance bulb ("Dynalog" electronic and galvanometer types)
thermocouple ("Dynalog" electronic and galvanometer types)

***Tension**

***Thickness (sheeted materials)**

***Viscosity**

***Voltage, Current, Impedance, Dielectric**

***Weight (sheeted materials in process)**

***Weight and Force (strain gauge type)**

**with Dynalog Electronic Instruments*

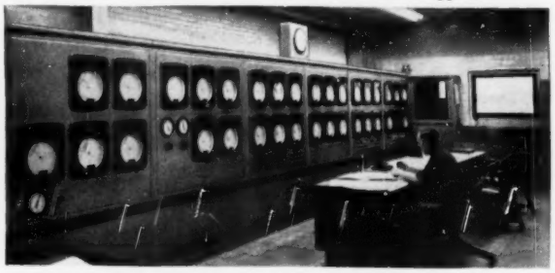
CONTROLLER TYPES

Pneumatic
Model 40: On-Off
Proportional
Proportional with Derivative
Proportional with Reset ("Stabilog")
Proportional with Reset and Derivative ("Hyper-Reset")
Consotrol (Console Graphic Panel Types): in all above control mechanisms except on-off
Model 41: On-Off and Proportional
Circular Case: On-Off and Proportional

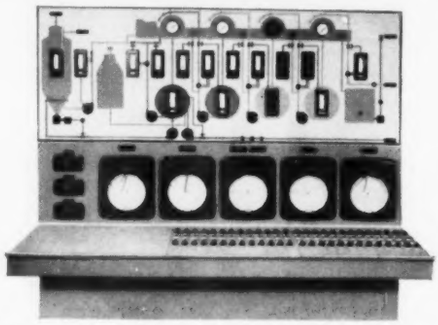
Electric
Rotax (rotary contact type)
On-Off
Multi-Position
Galvanometer Type
On-Off
2- and 3-position
Proportioning

CONTROL SYSTEMS

Auto-Selector	Ratio
Averaging	Relation
Dual	Sequence
Duplex	Time Schedule
Limit	(cam and camless types)



Complete Washer and Bleach Control Panel by Foxboro at S. D. Warren Company, Cumberland Mills, Maine.



Foxboro Graphic Panel for centralized control of brown stock washing at Gaylord Container Corp., Bogalusa, La.

THE FOXBORO COMPANY, 9912 Neponset Ave., Foxboro, Mass., U.S.A.

to our old customers

Thank you for your confidence in our products.

to our new customers

A hearty handshake and our promise to produce felts which will merit your continued patronage.

to our returning customers

Welcome home! Huyck expanded services are geared to help you.

a very merry christmas

and a prosperous Happy New Year to all our friends

KENWOOD TEXTILE PRODUCTS

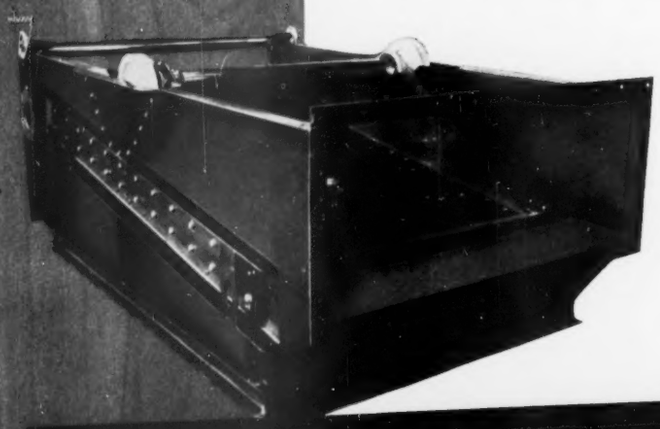
HUYCK FELTS

"First in Quality... First in Service"

F. C. HUYCK & SONS, RENSSELAER, N. Y.

First step to a clean pulp

THE REENER SCREEN



For Efficient, Economical Knotting

Vibratory screen—high capacity

Low power consumption

Small space requirements

Rubber mountings—low maintenance

A Cowan Brothers development

Laboratory model Screens available for experimental work.

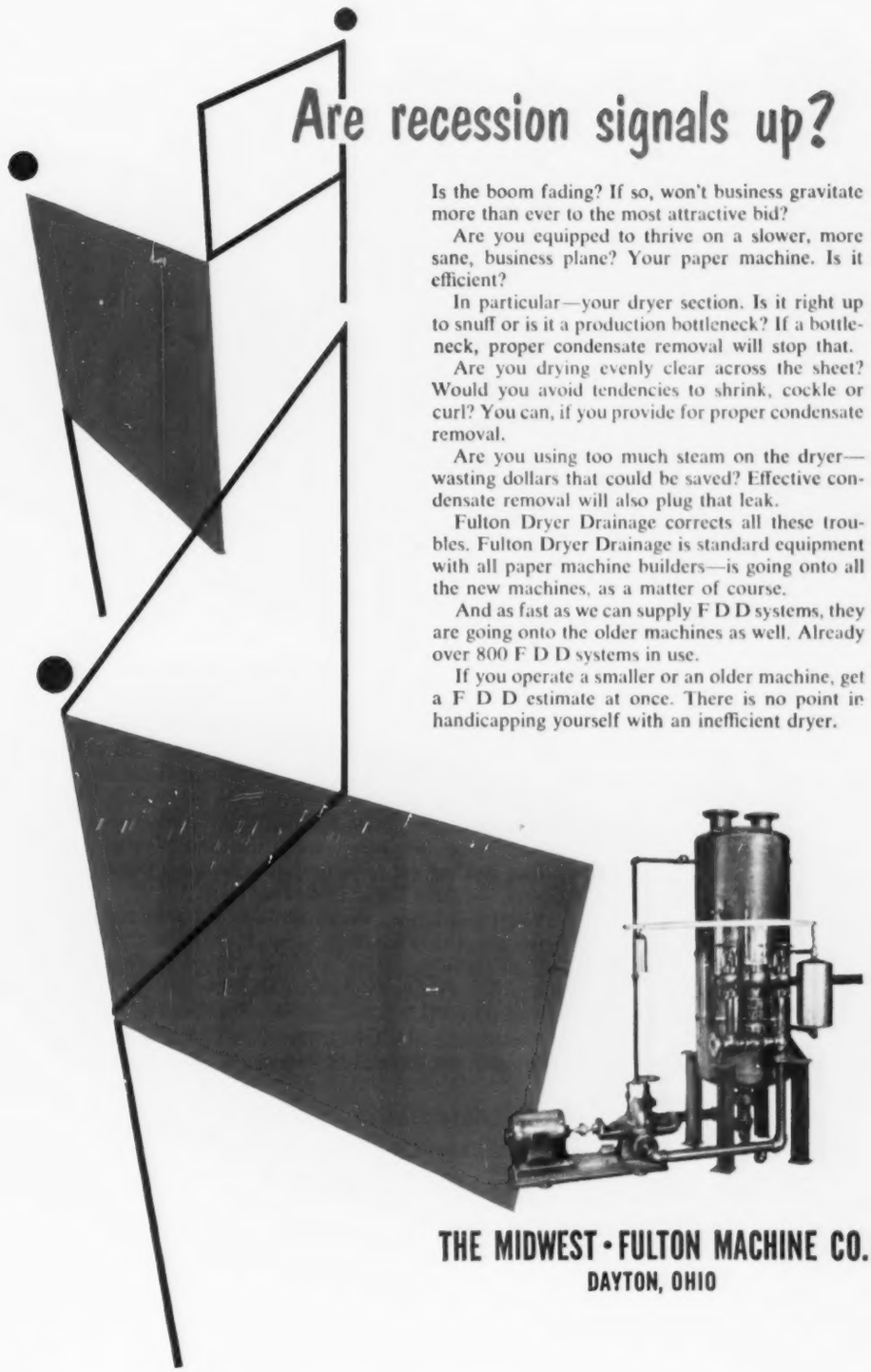
Write for Bulletin.

NICHOLS

Engineering & Research Corp.

70 PINE ST., NEW YORK 5, N. Y.

40 S. Los Robles Ave., Pasadena 1, Calif.



Are recession signals up?

Is the boom fading? If so, won't business gravitate more than ever to the most attractive bid?

Are you equipped to thrive on a slower, more sane, business plane? Your paper machine. Is it efficient?

In particular—your dryer section. Is it right up to snuff or is it a production bottleneck? If a bottleneck, proper condensate removal will stop that.

Are you drying evenly clear across the sheet? Would you avoid tendencies to shrink, cockle or curl? You can, if you provide for proper condensate removal.

Are you using too much steam on the dryer—wasting dollars that could be saved? Effective condensate removal will also plug that leak.

Fulton Dryer Drainage corrects all these troubles. Fulton Dryer Drainage is standard equipment with all paper machine builders—is going onto all the new machines, as a matter of course.

And as fast as we can supply F D D systems, they are going onto the older machines as well. Already over 800 F D D systems in use.

If you operate a smaller or an older machine, get a F D D estimate at once. There is no point in handicapping yourself with an inefficient dryer.

THE MIDWEST • FULTON MACHINE CO.
DAYTON, OHIO

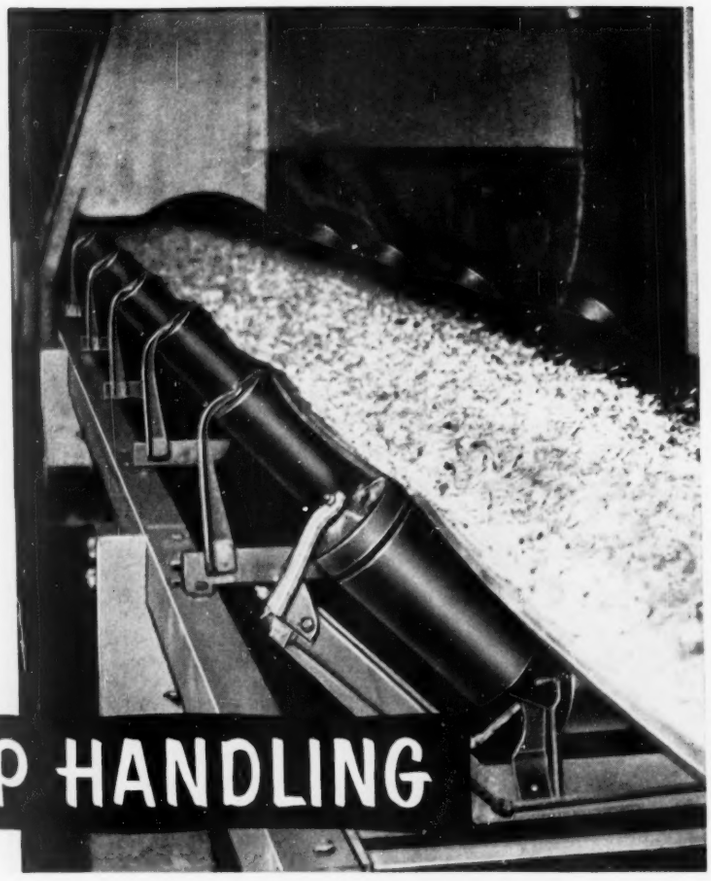
all through the mill

REX®

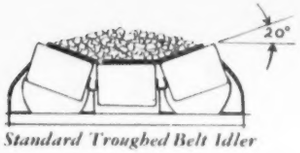
helps you handle it . . .

economically

for example:

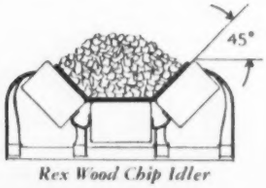


WOOD CHIP HANDLING



Standard Troughed Belt Idler

Note the much greater capacity made possible by the 45° angle of concentrating rolls on Rex Wood Chip Idler.



Rex Wood Chip Idler

All the way from pulp wood to paper, Rex can help you cut your handling costs. Take the Rex Wood Chip Belt Conveyor, for example. Rex Wood Chip Idlers are specially designed to meet the needs of the pulp and paper industry. The 45° slope of the concentrating rolls permits the loading of chips very close to the belt edge and piling them higher on the belt without danger of spillage. The capacity of the belt is thus greatly increased, and the cost per ton of chips handled is correspondingly reduced.

Rex Wood Chip Idlers are of the same high quality as standard Rex Idlers. You get the same long life, the same freedom from costly breakdowns, the same low maintenance costs.

You'll find it well worth while to ask your Rex man to review your entire wood chip handling setup. He's familiar with your problems, and he's an expert in chains, conveyors, idlers and elevators. Chances are he can help you cut costs, increase efficiency and get extra capacity, not only in your wood chip handling, but all through the mill.

Call your nearest Chain Belt branch office or write to Chain Belt Company, 4691 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

CHAIN BELT REX COMPANY®

Chain Belt COMPANY OF MILWAUKEE

Atlanta • Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville • Kansas City • Los Angeles Louisville • Midland, Texas • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Portland, Ore. • West Springfield, Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa Worcester

Distributors in Principal Cities in United States and Abroad

Export offices: 4800 W. Mitchell St., Milwaukee; and 19 Rector St., New York City

Advantages —

1. **EASIER TO BURR**
2. **HOLDS PATTERN LONGER**
3. **MORE UNIFORM GRINDING ACTION**

YOU'LL like the New G Bond that is now available for use with Norton Pulpstones of ALUNDUM and 38 ALUNDUM* abrasives. It will enable you to get the highest quality, cleanest pulp for longest periods. It is another Norton improvement to help you meet today's competitive conditions. Ask your Norton Pulpstone Engineer about the new G Bond stone.

NORTON COMPANY, WORCESTER 6, MASS.

Norton Company of Canada, Ltd.
Hamilton, Ontario

*Shown in illustration above

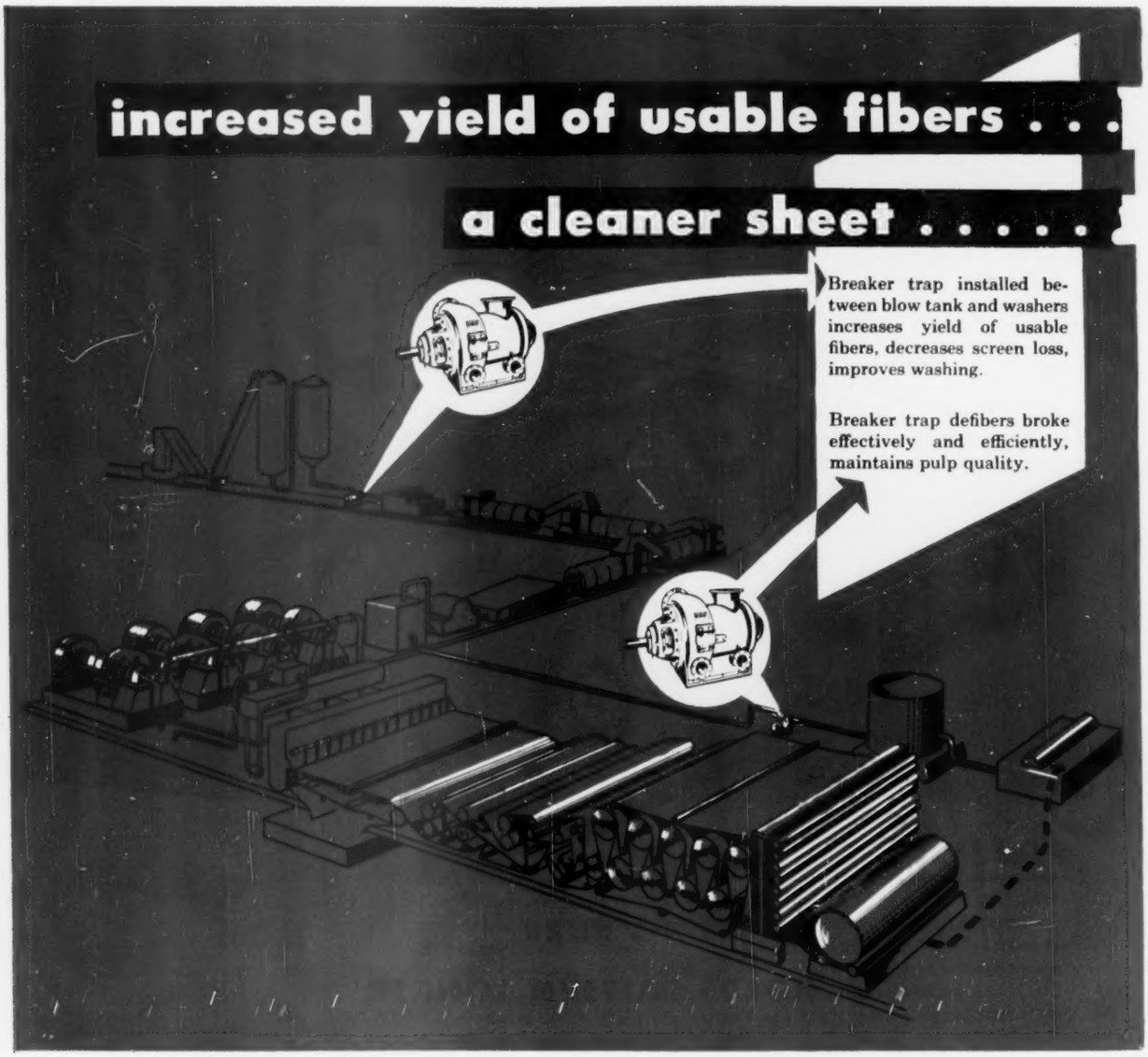
NORTON
PULPSTONES

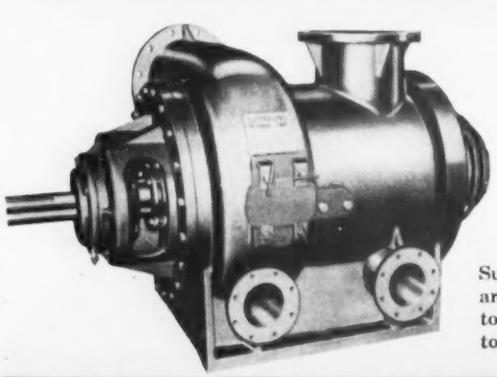
Making better products...to make other products better

Abrasives · Grinding Wheels · Grinding and Lapping Machines · Refractories · Porous Mediums · Non-slip Floors · Norbide Products

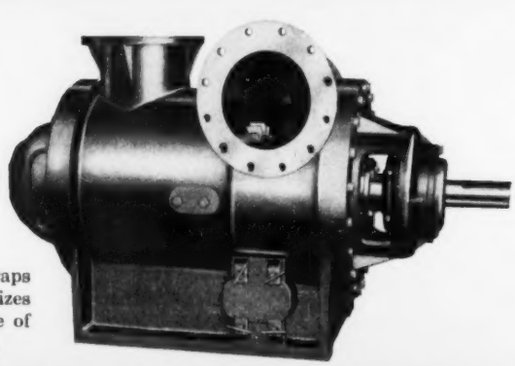
increased yield of usable fibers . . .

a cleaner sheet . . . . . .


Breaker trap installed between blow tank and washers increases yield of usable fibers, decreases screen loss, improves washing.
Breaker trap defibers broke effectively and efficiently, maintains pulp quality.

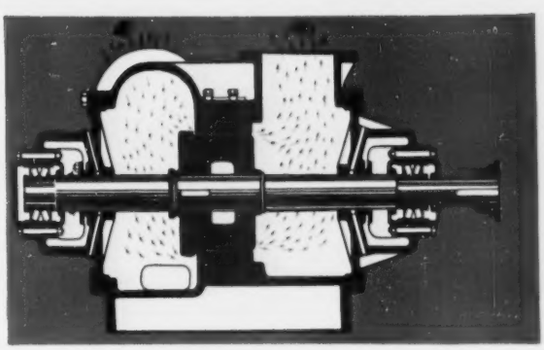


Sutherland breaker traps are available in three sizes to cover a wide range of tonnage requirements.



with the SUTHERLAND BREAKER TRAP
at a saving in power costs

The Sutherland Breaker Trap was specifically designed to do a job that had, previously, been done haphazardly by a variety of methods. Since it is designed *for the job* it means improved efficiency and operating economy, a fact that is being continually demonstrated in actual mill operations.



Cut away view showing operation of Sutherland Breaker Trap.

WHAT THE SUTHERLAND BREAKER TRAP DOES:

1. **Selectively defibers pulps, reducing oversize fiber bundles and thus increasing the yield of usable fibers.**
2. **Protects itself and the equipment that follows by removing large particles of both magnetic and non-magnetic tramp metal by centrifugal action.**
3. **Leaves intact other waste materials such as large dirt particles, cellophane, etc., so that they may be removed by standard screening methods, thus making for cleaner sheet.**

POWER COSTS

Since the Sutherland Breaker Trap is specifically built for these operations, it yields a substantial power saving over other equipment.

WRITE FOR ILLUSTRATED BOOKLET EXPLAINING OPERATION AND ADVANTAGES IN DETAIL.

APPLICATIONS

In the Pulp Mill:

High yield kraft

Defibering kraft pulps prior to washing

Following the Pulper:

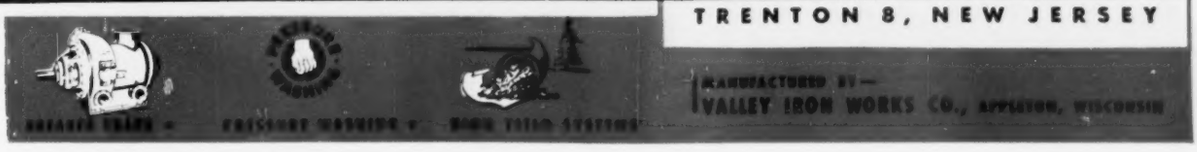
Defibering waste papers

Defibering dried pulps

Defibering broke

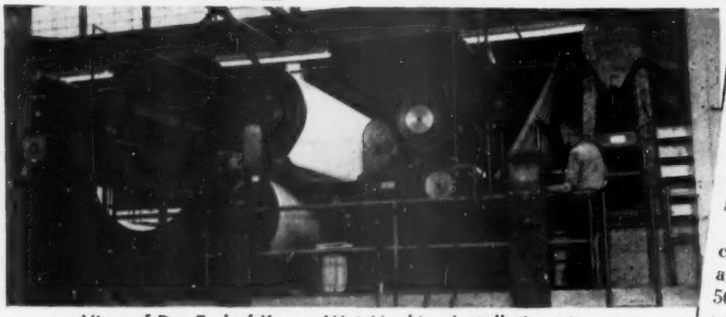
SUTHERLAND REFINER CORPORATION

TRENTON 8, NEW JERSEY



MANUFACTURED BY—
VALLEY IRON WORKS CO., APPLETON, WISCONSIN

Higher Yield... Drier Pulp...
in More and More Mills with
Kamyr Wet Machines



View of Dry End of Kamyr Wet Machine Installation at Consolidated Water Power & Paper Co., Appleton Division Mill

Consolidated's New Kamyr Wet Machine

Consolidated Water Power & Paper Co. has completed installation of a Kamyr wet machine at its Interlake (Appleton) Division pulp mill at an overall cost of $500,000.

The new two-press 156" feltless machine, built by the Sandy Hill Brass and Iron Works, is designed to produce 50 per cent oven-dry wet lap pulp. Company officials stated that this reduction in moisture content will cut shipping costs and that the machine will increase operating efficiency. All but a small amount of pulp produced at this loca-

Economical and Efficient Pulp Sheeting are chief factors in the current upswing in Kamyr Wet Machine sales.

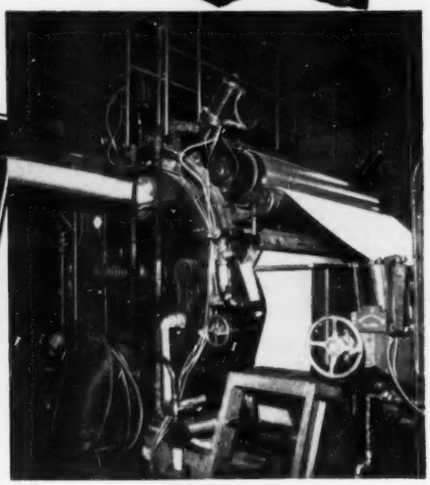
Lower Costs result from:

- Continuous Operation
- Larger Output
- Low Upkeep and Operating Costs
- No Felts
- Long Cylinder Mould Wire Life
- Lower Freight for Drier Pulp

More Efficient Sheeting due to:

- Uniform Consistency
- Greater Dryness
- Cutter Designed for Wet Sheeting
- Sheets of Suitable Size
- Easier Sheet Handling

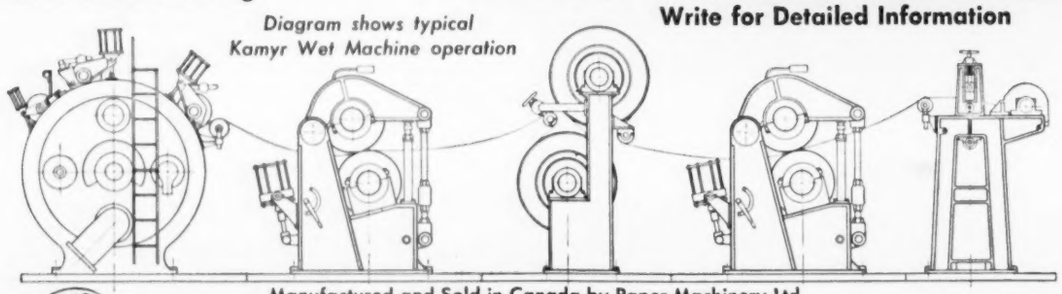
ONE Kamyr Wet Machine regularly replaces 8 to 10 Wet Lap Machines



The Mould Section on one of two recently installed Kamyr Wet Machines in mills of International Paper Co.

Write for Detailed Information

Diagram shows typical Kamyr Wet Machine operation



Manufactured and Sold in Canada by Paper Machinery Ltd.

The Sandy Hill Iron & Brass Works

Hudson Falls, N.Y.

An Entirely New CHEMICAL

NON-MERCURIC • NON-PHENOLIC

Microbiologists in the Nalco Laboratories developed Nalco 234, a new concept in bactericides, in their continuing search for more efficient and versatile slime control methods.

Fast Action SLIME CONTROL

with *Nalco* 234

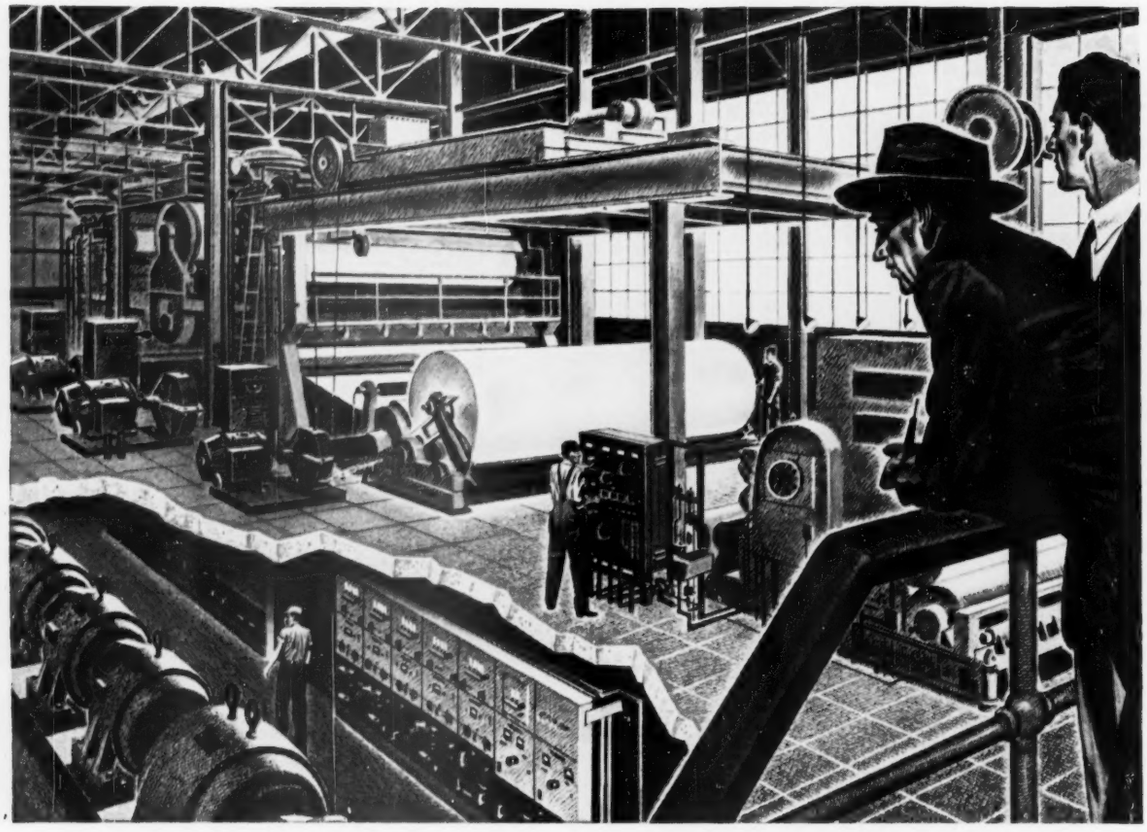
NALCO 234 is a new organic liquid formulation, developed and proved to meet an industry-wide need for a *quick-killing, non-odorous* bactericide for maintaining clean systems in all types of papermaking—including food packaging and sanitary papers.

Combining the advantages of excellent slime control with powerful dispersing action on fibrous and gelatinous masses in machine systems, Nalco 234 reduces breaks on machines, decreases total down time, and helps produce a more uniform sheet.

Write Nalco, or call your Nalco Representative for full data on fast-action Nalco 234.

NATIONAL ALUMINATE CORPORATION
6213 West 66th Place • Chicago 38, Illinois
In Canada: Alchem Limited, Burlington, Ontario

THE *Nalco*® SYSTEM
Serving the Paper Industry through Practical Applied Science



Wide Speed Range...

WITH HAIRLINE ACCURACY

Means profits in paper . . . or in your production picture

The paper industry affords just one example of the results which Reliance skill in application engineering and equipment design is accomplishing in all industries. For instance, on papermaking machines having up to 17 sections, each with its individual motor, the Reliance V★S System provides speeds up to 2500 feet per minute, adjustable over ranges of 10 to 1, or more, with better than ½ of 1% accuracy.

With profit margins in today's highly competitive markets tied directly to rate, continuity and quality of output, profit-minded management is turning more and more to Reliance for help in solving its toughest drive problems.

For your application, too! As the user or the builder of machinery, you may have a problem that can be solved by a specially engineered drive or by one of the many rugged Reliance industrial-duty motors. Whichever your situation, Reliance is ready to help you. A call to your nearby Reliance Sales Office . . . or a letter to us direct . . . will place at your disposal almost half a century of Reliance specialized engineering experience in the application of electric drives. A-1468

RELIANCE Precision Built MOTORS

RELIANCE ELECTRIC AND ENGINEERING CO.

1105 Ivanhoe Road, Cleveland 10, Ohio • Sales Representatives in Principal Cities

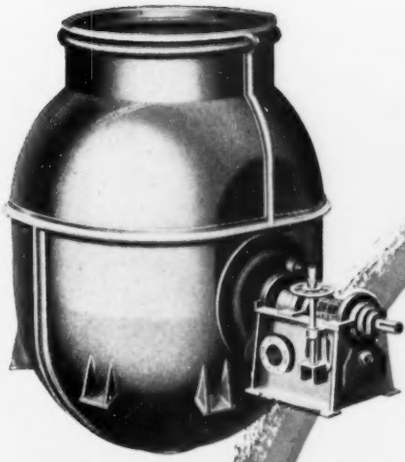
RELIANCE V★S SYSTEM

MOTORS • GEARMOTORS • ADJUSTABLE-SPEED DRIVES • MOTOR-GENERATOR SETS • ELECTRONIC AND MAGNETIC CONTROLS AND REGULATORS

Morden-ize

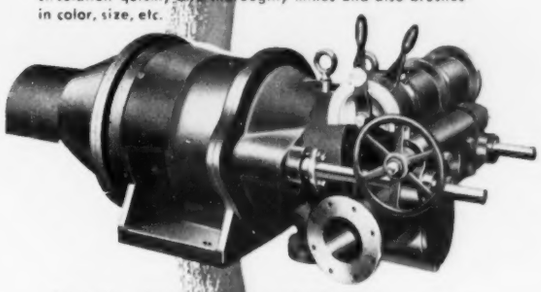
YOUR STOCK PREPARATION

WITH Morden { SLUSH-MAKERS / STOCK-MAKERS / STUFF-MAKERS



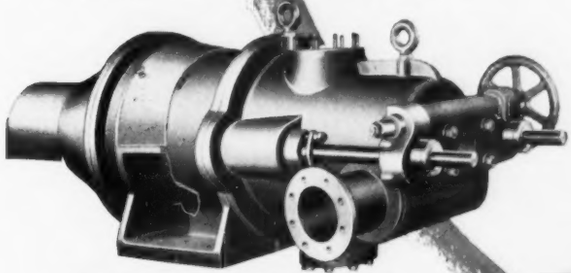
MORDEN "SLUSH-MAKER" FOR PULPING

The "Slush-Maker's" side-mounted rotor quickly and efficiently slushes a full charge of pulp, broke or waste paper, either batch or continuous. The rotor's combination pumping, shredding and brushing blades continually direct the charge at right angles against the attritioning ring, where a controlled bar-to-bar brushing completely clears all flakes and bundles, even high wet strength, without damage to the fibers. The "Slush-Maker's" positive-flow circulation quickly and thoroughly mixes and also brushes in color, size, etc.



MORDEN "STOCK-MAKER" FOR BEATING

The "Stock-Maker" with its 360° bed plate gives the maximum of brushing, fibrillating, beating or hydrating treatment with the minimum of cutting. The "Stock-Maker" operates on a continuous flow basis from chest to chest or chest to stuff box. The reverse-flow, sealed pressure treatment of one "Stock-Maker" will duplicate or improve upon the stock treatment of two or three conventional beaters and yet requires only one third the space of one beater.



MORDEN "STUFF-MAKER" FOR JORDANING

The "Stuff-Maker" utilizes the "Stock-Maker's" well proven construction features but provides a "jordan-type" flow, for shortening or cutting the stuff when required.

Experience with nearly 700 Morden Machines in 175 mills on all types of pulp and grades of paper proves that:

These three Morden Machines are especially designed, each to excel in one of the three phases of stock preparation—pulping, beating or jordaning.

Each of these Morden Machines is engineered for the utmost in efficiency, simplicity, versatility and economy of operation.

These Morden Machines are designed to fit readily into all types of stock preparation systems and can be used together or in combination with existing equipment to give efficiently the various treatments required for developing the most in each furnish.

Let us know of your interest, and we will gladly provide detailed information on how to advantageously Morden-ize your stock preparation system.

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

Corbett Building, Portland, Oregon.

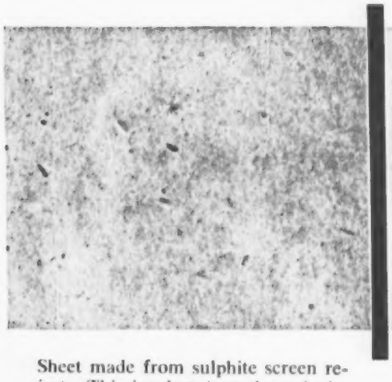
Results are spectacular with

Bauer CENTRI • CLEANERS

Everyone who sees examples of the work done by Centri•Cleaners is astonished at the results. The examples are sheets made from the stock which goes into the Centri•Cleaners, sheets made from the accepted stock, and sheets made from the final rejects. Some photographic reproductions are shown below, but they are not as sensational as the sheets themselves.

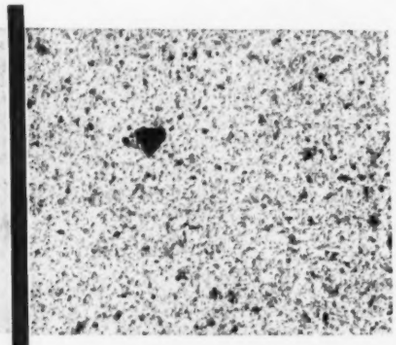
Our representatives have assortments of sheets from a number of kinds of stock processed with the No. 600 and No. 622 Centri•Cleaners. If you wish to see the examples, let us know and our representative in your area will show them to you on his next call.

In the meantime, we suggest that you ask for our Bulletin No. P-4 which explains the construction and operation of Centri•Cleaners.

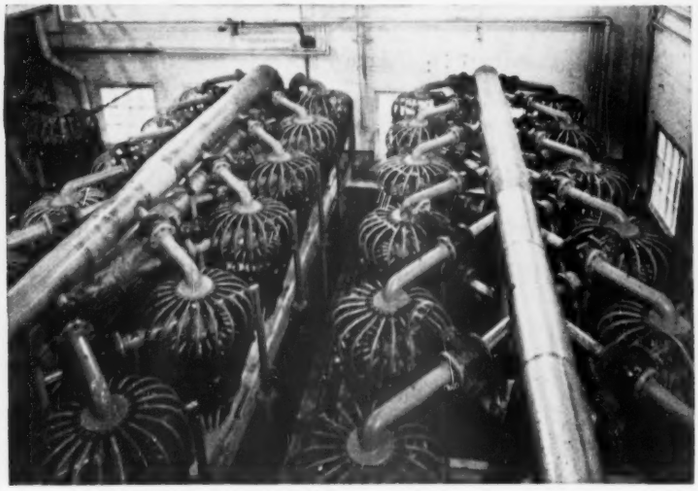


Sheet made from sulphite screen rejects. This is what went through the Centri•Cleaners.

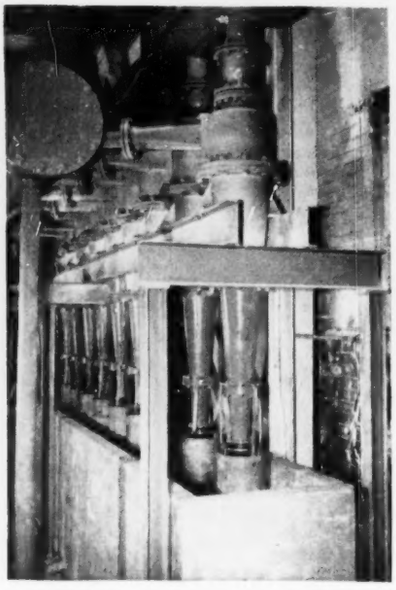
Sheet made of accepted stock from the primary group of Centri•Cleaners.



Sheet made of Centri•Cleaner final rejects. This sheet consists of sand, bark, shives, and other refuse.



Overhead view of No. 600-3″ Centri•Cleaners manifolded into inlet and outlet headers. These Centri•Cleaners are cleaning unbleached sulphite pulp.

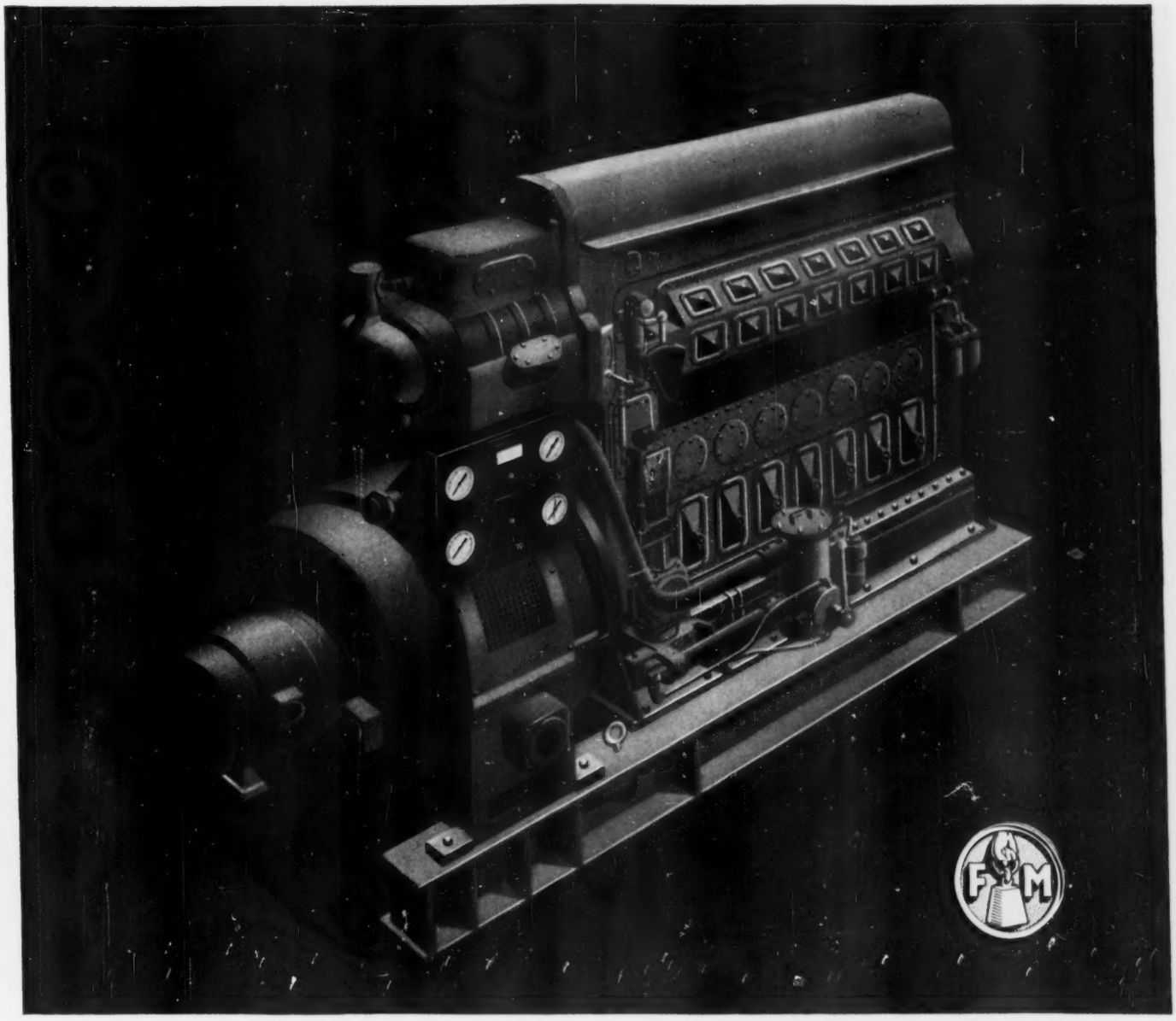


Installation of ten primary and one secondary No. 622-12″x4″ Centri•Cleaner ahead of a paper machine. Each group is manifolded into inlet and outlet headers.

Our representative will be glad to show you actual examples of work done by Centri•Cleaners.

Ask for Bulletin No. P-4

THE BAUER BROS. CO. • 1706 Sheridan Ave. • Springfield, Ohio



The Fairbanks-Morse Opposed Piston Diesel Model 38F 5¼. 225 to 750 horsepower. Diesel, Dual Fuel and Spark-ignition options. Other O-P engines available in horsepower ratings to 2400.

Some engines are not good enough

Yes, there are some diesels which just do not have what it takes for the job. They cannot satisfy the owner's pride in smooth, trouble-free operation and are lacking in the ability to square a balance sheet of operational costs and profits. For the more difficult jobs, many engines are simply not good enough.

Maybe you should pay more and get more!

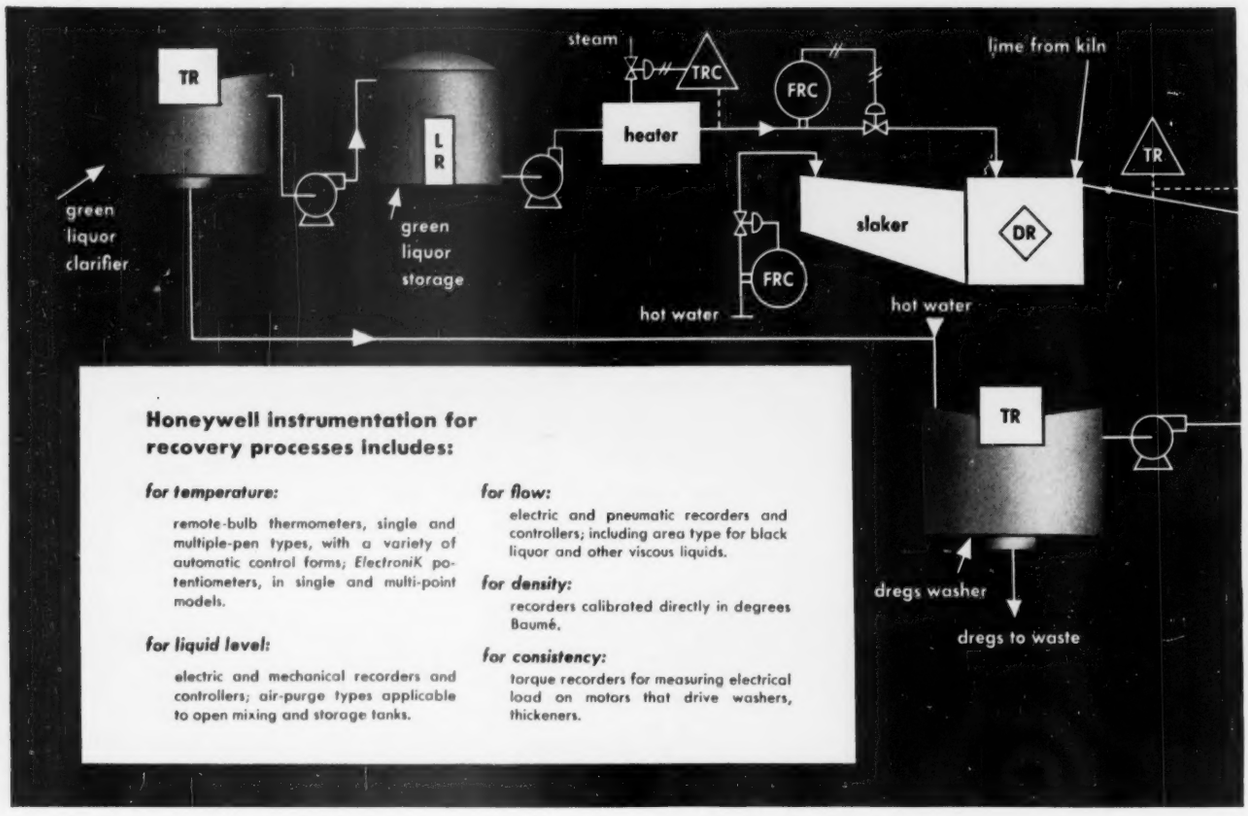
If you want more engine-hours with fewer man-hours, *then* you should have the F-M Opposed Piston Diesel which will cost a little more and give you much, *much* more.

Fairbanks, Morse & Co., Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the best

DIESEL AND DUAL FUEL ENGINES • DIESEL LOCOMOTIVES • RAIL CARS • ELECTRICAL MACHINERY • PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS



Honeywell instrumentation for recovery processes includes:

for temperature:

remote-bulb thermometers, single and multiple-pen types, with a variety of automatic control forms; *ElectroniK* potentiometers, in single and multi-point models.

for liquid level:

electric and mechanical recorders and controllers; air-purge types applicable to open mixing and storage tanks.

for flow:

electric and pneumatic recorders and controllers; including area type for black liquor and other viscous liquids.

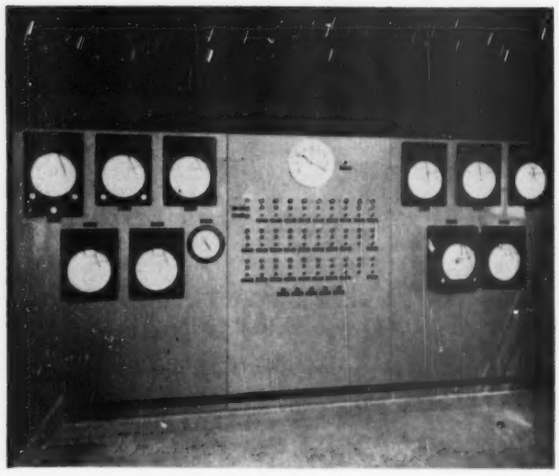
for density:

recorders calibrated directly in degrees Baumé.

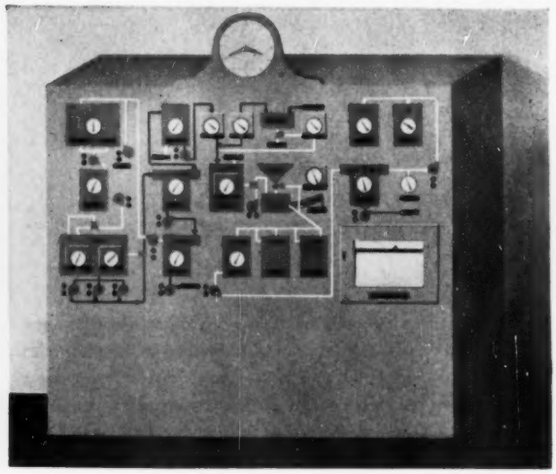
for consistency:

torque recorders for measuring electrical load on motors that drive washers, thickeners.

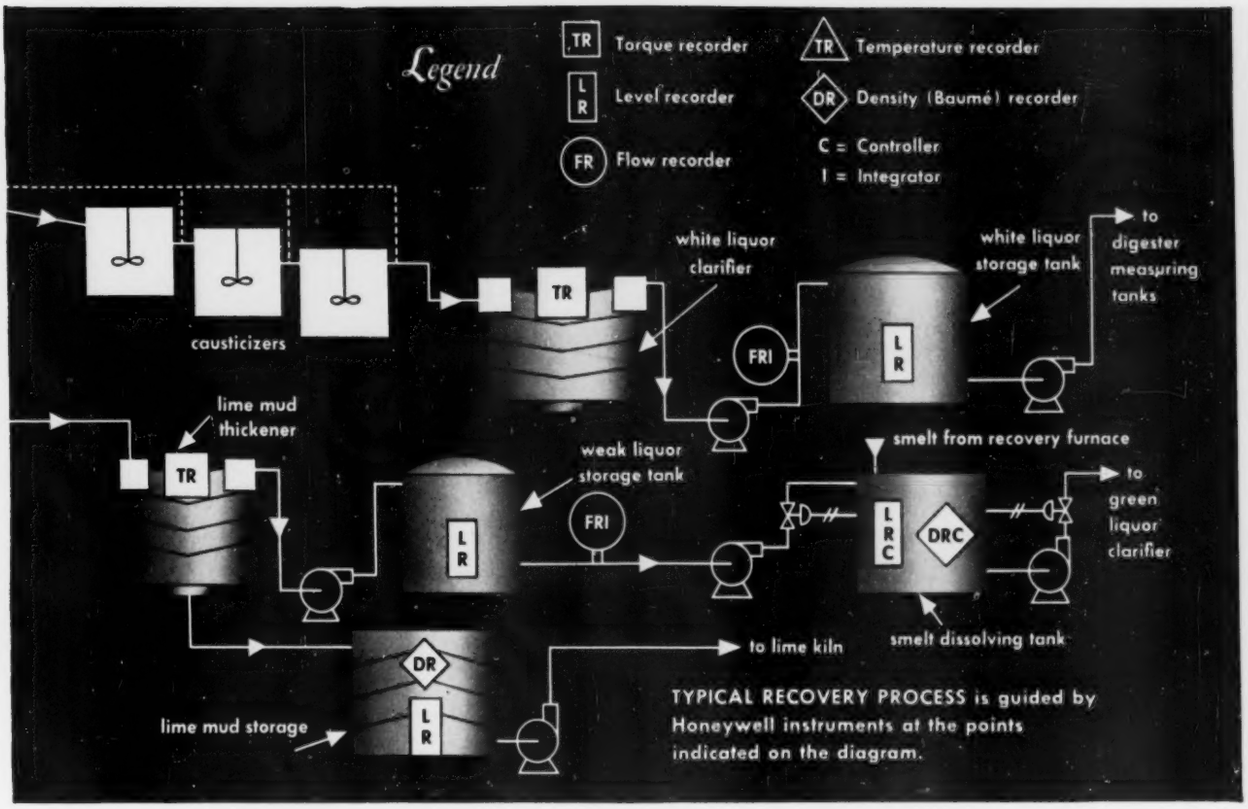
Greater chemical recovery *with complete*



Complete instrumentation for individual recovery processes is engineered by Honeywell into integrated control boards. These may be panels like this one . . .



. . . or graphic panels, like this proposed design which concentrates all control of the recovery operation into a compact, easily understood unit that one man can operate.



in recausticizing systems *instrumentation* . . . by Honeywell

THE recovery process, often the key operation in setting mill efficiency, can be kept functioning at peak economy and maximum safety through the use of Honeywell instrumentation. This complete line of instruments fills every vital assignment of measurement and control throughout the recovery process.

Endorsed by years of use in leading mills, Honeywell recovery instrumentation covers temperatures, liquid levels, flows, density, torque . . . all in a variety of measuring and controlling models and ranges. Specialists who have wide experience with paper industry applications design these basic elements into integrated systems that are custom-fitted to your specific recovery process.

To assure your mill of realizing the full, uninterrupted benefits of modern control, Honeywell's nation-wide service organization stands ready to give your instrumentation prompt, experienced attention any time you need it.

Your nearby Honeywell field engineer will welcome the opportunity to discuss instrumentation for recovery or any other paper mill process. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.

● **REFERENCE DATA:** Write for Bulletin 2802, "Instrumentation for the Paper Industry."

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BROWN INSTRUMENTS
First in Controls

For makers of Quality Papers

Albacel — Bleached pine sulphate . . . the cleanest pulp of its kind available from any source. Outstanding for overall strength.

Super Albacel — A special grade of Albacel pulp with the additional quality of outstanding brightness.

Astracel — The perfected bleached hardwood sulphate . . . made from carefully selected species of southern hardwood trees which yield the longest and finest hardwood fibre available. Astracel has the excellent forming qualities found in northern hardwoods . . . *plus great strength*. Chlorine dioxide bleaching imparts unusual brightness.

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Three bleached sulphate pulps, originally created to the exacting standards of the Riegel Paper Mills, are now available to all makers of quality papers. The cleanliness of these pulps is unsurpassed and their strength and brightness outstanding.

They are produced at Riegel Carolina's new pulp mill at Riegelwood, N. C., with every refinement and control known to modern pulp manufacture. A dependable source of pulpwood is assured by nearby Riegel Woodlands, under Riegel planned forest management since 1937.

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rapid development with good fastness to light

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Whatever your specifications call for ...and whatever the size of components ...Newport News fabricates each part to completely answer your demands.

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Send us your inquiries. Take advantage of the high integration of skill and production facilities at Newport News... for it assures you of equipment easy to install and economical in performance. Write us today for your copy of "*Facilities and Products.*"

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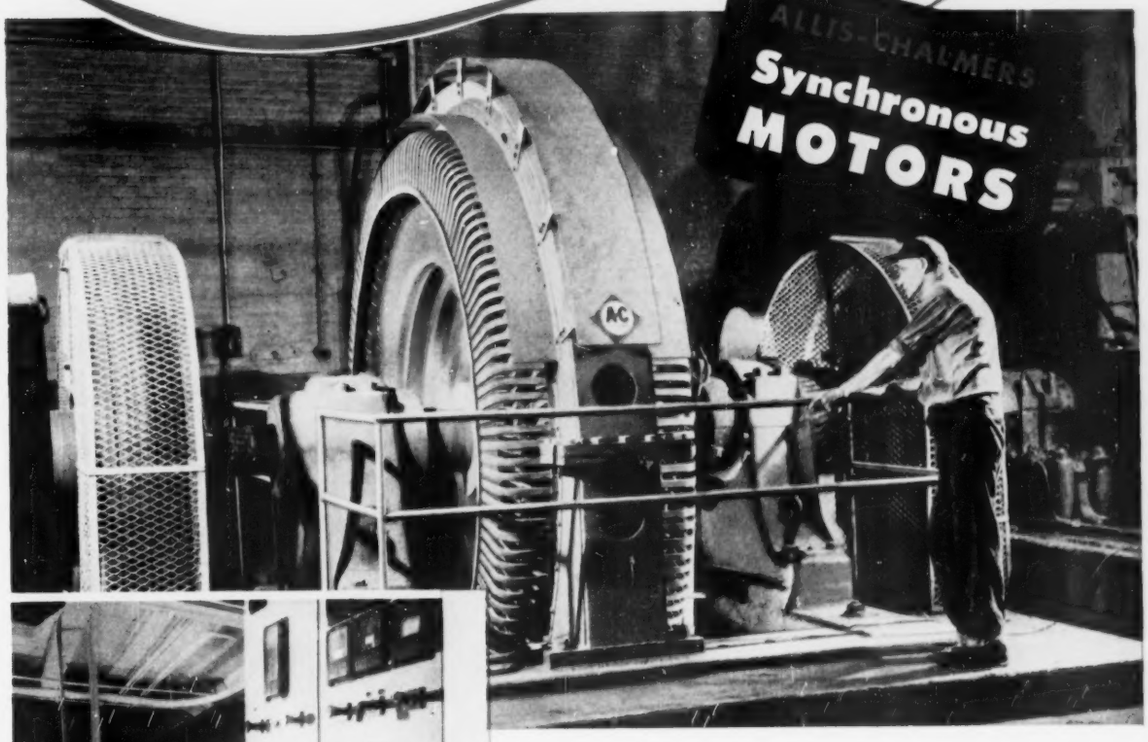
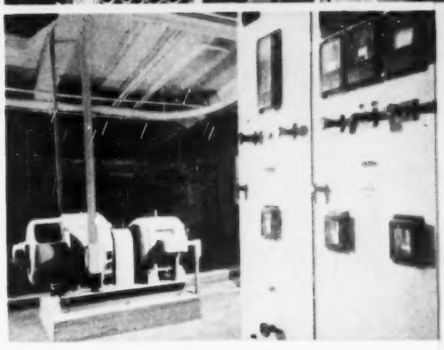
Newport News, Virginia

Revamped Installation Produces 25% More Pulp





Revamped grinder motor in Northern Paper Mills plant at Green Bay, Wisconsin, is rated 3000 hp, 100% pf, 4000 volts, 225 rpm. Revamping required no changes in foundation or motor base.

Bottom view shows 25-kw, 1750-rpm excitation motor-generator set and 4160-volt, vertical lift, metal-clad switchgear for control of the grinder motor.

Northern Paper Mills recently completed revamping operations that added 25% to the capacity of a 23-year-old grinding installation. By retaining much of the original equipment, machinery and installation costs were minimized.

To drive larger stones in the grinders, Allis-Chalmers supplied a new stator and rotor to raise the rating of the double-shaft-extension motor from 2500 hp to 3000 hp. In addition to the new motor parts, A-C also furnished an excitation set and switchgear for controlling the motor.

For old or new plants, Allis-Chalmers can supply your electrical needs from power generation to drive motors. For helpful information about synchronous motors, ask your A-C representative for Bulletins 05B7648 and 05B7649, or write to Allis-Chalmers, Milwaukee 1, Wisconsin. 4027

ALLIS-CHALMERS

Flowing lime, soda ash, salt cake, starch, and clays with the Airveyor—unloading from cars to storage or in-plant conveying—is the simplest, most economical conveyor for the handling of mill-supply chemicals in the paper industry.

Conveying by air is a specialty of the Fuller Company for over a quarter of a century. Experience, such as this, places it in a top position to recommend and design a system which will give you the most economical results.

If you are interested in keeping conveying costs at a minimum. . . if you want to improve your operating balance sheet. . . you should talk to a Fuller engineer. A study of your operations will cost you nothing. . . may well point the way to consistently profitable operation and a smoother flow in production.

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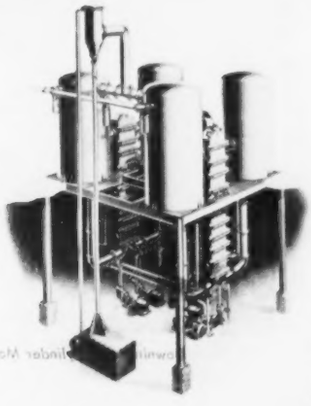
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS . . . COMPRESSORS AND VACUUM PUMPS . . . FEEDERS AND ASSOCIATED EQUIPMENT

Operating installations in the U. S. A. prove value of General American Conkey Evaporators with Rosenblad Switching System*

Full details available

Find out how a Conkey Evaporator with Rosenblad Switching System can avoid "down time" and eliminate scale removal costs for you.

- **stream pollution nuisance eliminated**
- **continuous capacity operation**
- **reduced fuel costs with liquor burning**
- **by-product return from concentrated liquor**



Conkey 4-Body Triple effect Flat Plate Heating Surface Evaporator

PROCESS EQUIPMENT DIVISION GENERAL AMERICAN

PROCESS EQUIPMENT DIVISION
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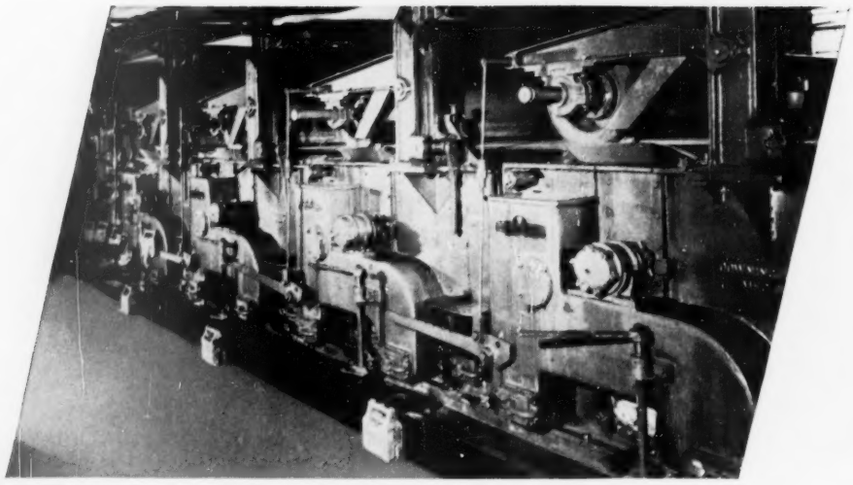
*PATENTS APPLIED FOR

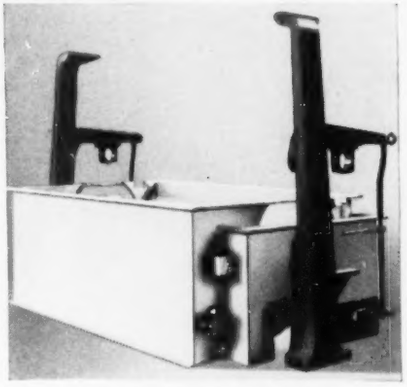
Sole licensee in the U. S. A. for the A. B. Rosenblads Patenter Evaporator Switching System



CONSERVATION ***through better sheet formation with Downingtown PROFLOW and CONFLOW vats***

Conservation of timber resources is an important and vital factor in our country's economy. This conservation can go farther. It can be applied in the paper and board making industry through modernization of existing machinery.

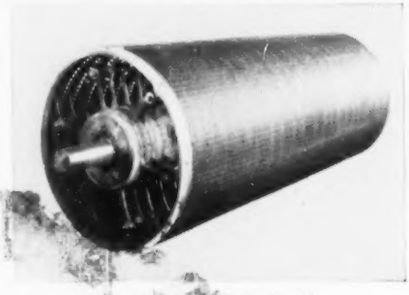
Modern efficient vats, the Downingtown Proflow and Conflow Vats, help conserve paper by insuring a better sheet formation. This results in fewer rejects and waste in the paper and board making process.



A Downingtown Stainless Steel Vat

Downingtown manufactures the cylinder moulds and plain or suction type cylinder couch rolls required for board machine vats.

Find out how Downingtown Proflow and Conflow Vats can help your production. Write for specifications and performance data or consult your Downingtown Sales Engineer.



Downingtown Cylinder Mould

MODERNIZATION IS CONSERVATION

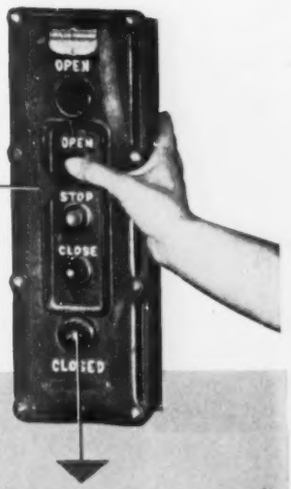
DOWNINGTOWN MANUFACTURING COMPANY, DOWNINGTOWN, PA.

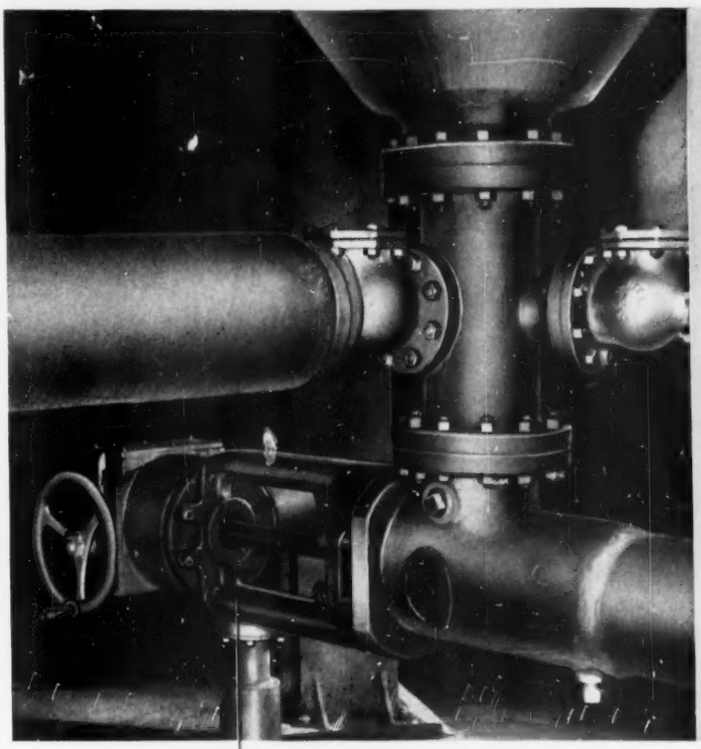
Pacific Coast Representative: John V. Roslund, Pacific Building, Portland 4, Oregon

Downingtown Fibrepulper, Manufactured in Canada by Waterous, Limited, Brantford, Ontario

PROFLOW AND CONFLOW VATS

easy way to blow down pulp digesters





Press a button. *That's all there is to it.*

You don't even have to go down to the discharge floor; the button can be conveniently located right on the operating level.

That's one of several reasons why Yarway Remote-Controlled, Motor-Operated, Digester Blow Valves have become standard equipment on pulp digesters in many leading plants—*names on request.*

One of eight Yarway Digester Blow Valves installed at a Canadian paper mill.

OTHER REASONS:

1. The famous Yarway non-clog *seatless* operating principle that assures tightness and effectively seals off the digester, preventing loss of black liquor and increasing the number of cooks per day.
2. Yarway's rugged construction withstands severe shock.
3. Yarway's modern metallurgy withstands severe chemical action.
4. Fast operation results from motor control and self-cleaning free discharge.

If you are interested in increased production, low maintenance, savings in labor—then you're interested in Yarway Digester Blow Valves. Write for full description and specifications in Yarway Bulletin B-440.

YARNALL-WARING COMPANY
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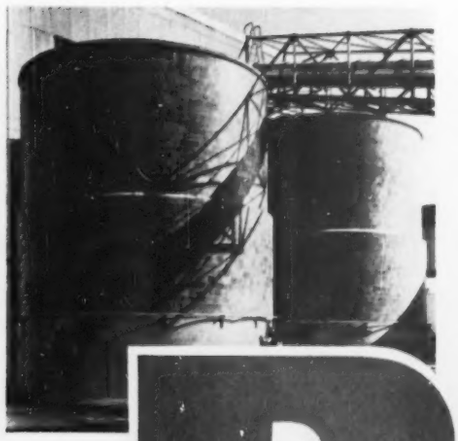
YARWAY



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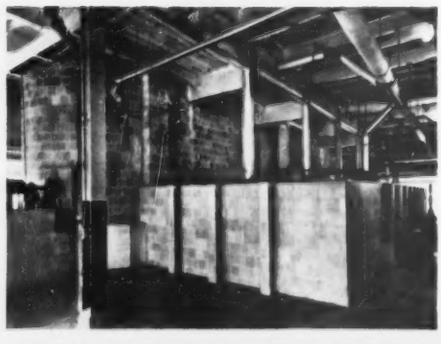
Complete service — design, engineering, construction, maintenance — of corrosion-resistant storage and process structures — from the smallest to the largest.

For wet materials, these structures are reinforced concrete faced on both sides with glazed tile; for dry materials, they can be either this same construction or steel-reinforced hollow tile.



70 Years of Successful Corrosion Resistant Installations throughout the North American Continent

Write for Bulletin A-153

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STEBBINS ENGINEERING CORP. — TEXTILE TOWER, SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — CASTLE BLDG., MONTREAL, CANADA

The many sections of SOLVAY'S Industry-Wise TECHNICAL SERVICE *are always ready to help you!*

SOLVAY has a Technical Service Staff of engineers, chemists and technicians *specifically trained for individual industries!* They are available at all times—to assist you with your problems—AT NO COST OR OBLIGATION!

THESE TOP-NOTCH CONSULTANTS are ready to cooperate with you—in the development of a new or improved process for your particular situation . . . suggest better methods of handling, storing and using industrial alkalies . . . and furnish complete details on all SOLVAY products.

THESE SERVICES INCLUDE: SOLVAY'S *field service* . . . SOLVAY'S *laboratory service* (with the best alkali research facilities in the world) . . . and SOLVAY'S extensive series of *technical bulletins.*

EACH SEPARATE SECTION is prepared to work with you on your individual problems—*in complete confidence.* Among these sections are: glass, paper, textiles, ceramics, water and industrial waste, dairies and launderies, concrete, highway construction and maintenance.

. . . So today—why not 'phone or write your nearest SOLVAY office for further information?

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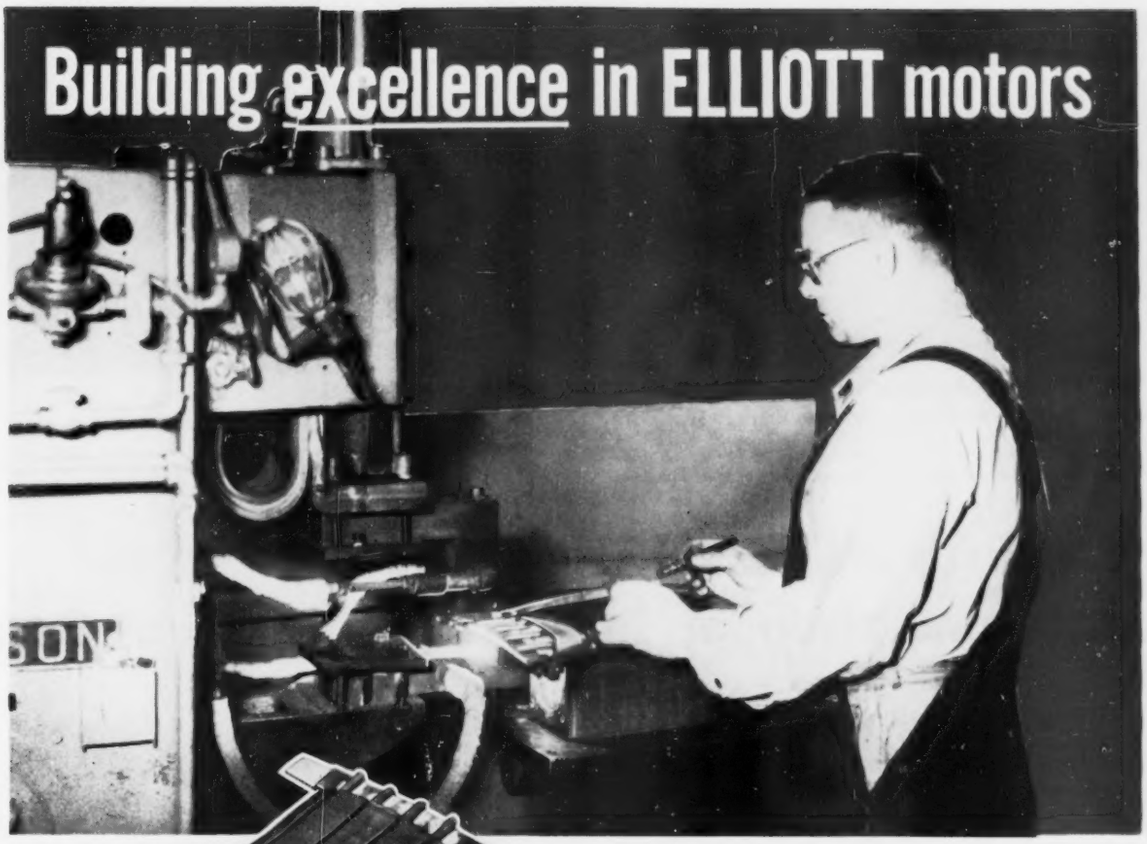
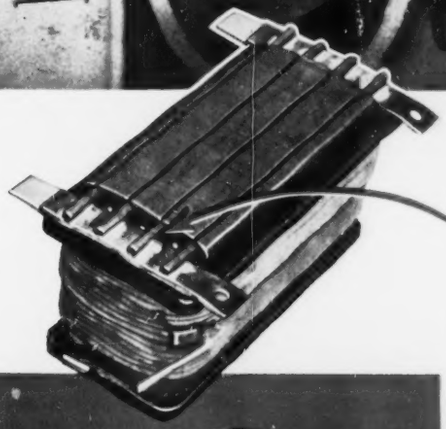
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

Building excellence in ELLIOTT motors





Silver brazing for permanence!

Low-speed synchronous motor with split rotor and collector-ring enclosure.

● Damper bars of Elliott synchronous motors are individually silver brazed to broad end-ring segments by the resistance brazing method. The brazing alloy is fed in and flowed along the length of both sides of the joint, forming a long, thick low-resistance, high-strength fillet. Graphite electrodes clamp the bar to the end-ring until the silver brazing alloy solidifies. The special jig shown accurately locates the end-ring segment with relation to the damper bars and pole-piece.

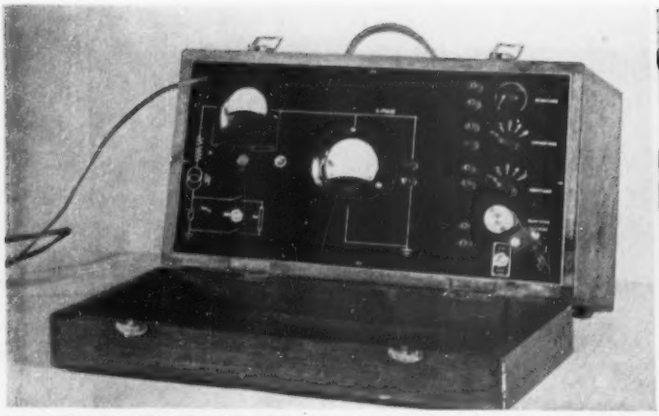
For data on the complete line of Elliott large motors, consult your local Elliott engineer or write Elliott Company, Ridgway, Pa.

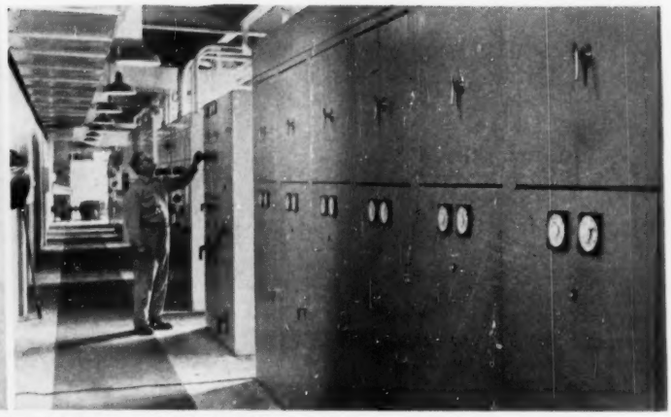
ELLIOTT Company

RIDGWAY DIVISION

FOR MOTORS 1-200 HP. CROCKER WHEELER DIV. AMPERE, N. J.

R3-7





GROUNDED SYSTEM JUDGED BEST IN ELECTRICAL ENGINEERING PAPER AT MONTREAL

LEFT—A GENERAL ELECTRIC over-voltage demonstration kit. This was described in paper by GEO. HOBBS and R. H. KAUFMANN and is used to illustrate creation of excessive line-to-ground voltage stresses and to show how these may be virtually eliminated by system grounding. Overvoltages five times normal can be easily developed on ungrounded system.

RIGHT—SHOWS A MOTOR CONTROL and excitation panel in one of big Southern pulp and paper mills. In foreground is a 2300 volt Limitamp motor control. The operator is adjusting a control at the D-C excitation panel.

NEW IDEAS IN ELECTRICAL ENGINEERING
An Interpretation of Important Montreal Papers

By M. J. Osborne

Electrical Engineer, Bowaters Southern Paper Corp.

***PAPER TENSION REGULATORS*—by Geo. C. Ehemann Jr., Plant Engineer, Ohio Boxboard Co., Rittman, O., and R. C. Berger, General Electric Co., Cleveland, O.**

This was a clear, comprehensive presentation on the part of both Mr. Ehemann and Mr. Berger. The point of the paper was clearly stated at the beginning. This discussion was limited to feed-back control systems used as tension regulators. Stated simply the tension regulator must measure—compare—correct.

Schematic representations of most tension regulators were shown on slides. To illustrate the number of possible combinations the writers presented one slide as follows:

Deflection	CONTROL	Brake
Balanced Pressure		Motor or Generator
Position		
Amperage		Mechanical Speed Change
Air leakage		

The measurement may use any of the signals shown on the left which is fed into the control portion of the regulator. The control may consist of quite a number of schemes such as magnetic, rotating or electronic amplifiers acting on any of the components listed on the right.

These writers presented all of the commonly used tension regulators, both fairly and well, and with no mention of trade names or manufacturers. No attempt was made to analyze the specific problems of regulators such as time constants anti-hunt, range, stability or sensitivity, however, they were recognized as important considerations that influence the choice of control schemes.

***DIFFERENTIAL PAPER MACHINE DRIVES*—by Sterling Skinner, Assistant Chief Engineer, Beloit Iron Works**

I was quite interested in the paper read by Mr. Skinner. Before listening to this paper, I had considered this mechanical drive as a good effort to compete with the flexibility, cost and performance of the section electrical drive—although still lacking in certain respects. Mr. Skinner's paper was presented so that all of us in the industry could have a better understanding of this mechanical drive. With this drive, power is transmitted from a line shaft to each section through a differential drive unit. The major portion of this power passes through the side of the differential which is geared directly to the line shaft. A small proportion of power passes through a variable speed transmission and is then applied to the other side of the differential. This makes possible sensitive draw adjustment while insuring maintenance of draw. By mounting the helical gear reducers at angles, the difference of elevations of the section input shafts up to 7 or 8 ft. could be tolerated.

I noted that the wet end of a modern kraft machine with suction pick-up uses quite a few electric motors as helper drives:

Couch—Helper
Suction Pick-up—Helper
Top Transfer Press—Helper
Bottom Transfer Press—Helper
1st Press of Cloverleaf—Helper
2nd Press of Cloverleaf—Differential
Wire Turning Roll—Differential
1st Dryer—Differential

Mr. Skinner stated that the use of electric helper drives does not affect the draw between sections or the "fixed ratio" established by the differential drives.

The differential unit is a Link-Belt PIV with 400 percent speed range. The draw was stated as 6 percent. If this is plus 5 percent and minus one percent and the PIV used has a peak rating of 22 hp, the maximum horsepower per section would be 440 with no service factor or about 250 hp with a service factor.

I tried to picture the device used for slack take-up—failing in this I "asked the

---

Pulp & Paper Takes Pleasure

M. J. (Johnnie) Osborne's comments on the electrical and power developments at the annual Fall Engineering Conferences and also at Paper Week in February, both sponsored by Tappi, are familiar to PULP & PAPER readers.

Mr. Osborne is an active member of Tappi's Electrical Engineering Committee. His career with the Atomic Energy Commission at Oak Ridge in electro-magnetic separation work; on turbo-electric tankers in the war; then in speedup of some of the industry's fastest machines at Crossett Paper Mills, and presently in helping build the new Bowaters Southern Corp. pulp and paper mill at Calhoun, Tenn., has given him a rich and practical background for expressing views on these matters.

Mr. Osborne was born in Florida, graduated from Georgia Tech in 1944.

This report for PULP & PAPER expresses his own interpretations of some of the papers that especially interested him at the 8th annual Engineering Conference, held at Montreal, Oct. 26-29.

The opinions expressed here are his own.

man who owns one." The slack take-up consists of a quick-acting pneumatic piston (formerly hydraulic) which acts on the PIV and returns to the former setting when the pushbutton is released.

The strongest claims for this drive were the reduction in sheet, breaks and the reduction in shrinkage in the width of the sheet—5 in. shrinkage on a 130 in. wide machine for this drive was compared to a 7 in. shrinkage on a 100 in. wide machine.

I believe this drive has a definite place in the industry. I consider its best application on machines with many sections and with low or moderate horsepower per section.

I would like to see quite a few comparisons made on sheet shrinkage. It would also be of interest to see lost time studies made on mechanical drives as they are being made on electrical drives.

M. J. OSBORNE writes his own views and interpretations of some of electrical engineering papers at Montreal.

GROUNDED VS. UNGROUNDED POWER SYSTEMS—by Geo. P. Hobbs, Assistant Chief Engineer, Bowaters Newfoundland Mills, and R. H. Kaufmann, Industrial Power Engineer, General Electric Co., Schenectady, N. Y.

This timely and controversial electrical engineering topic was well handled in two methods by Mr. Hobbs and Mr. Kaufmann of General Electric. Mr. Kaufmann presented the analytical approach with a convincing demonstration and Mr. Hobbs spoke of operating experiences at Corner Brook, Nfd., and the plans for electrical modernization in this mill.

Mr. Kaufmann proposed that most premature insulation failures may be attributed to overvoltages—many of these failures may be eliminated by effective system neutral grounding. Overvoltages may be considered almost a certainty when multiple simultaneous breakdowns occur. Lighting can be positively ruled out in very many cases.

The ungrounded electrical system is much more susceptible to overvoltages than the grounded system for two major reasons:

1. The ungrounded system assumes the voltage to ground that is impressed.

2. The capacitive coupling to ground, a property of the ungrounded system, can be the element responsible for the overvoltage by one of two mechanisms.

These two mechanisms were demonstrated using a miniature distribution system and establishing line-to-ground faults through resistance, capacitive reactance or inductive reactance. Overvoltage resulting from a high reactance fault due to series resonance was clearly shown as the demonstrator voltmeter indicated a line to ground voltage of five times normal. This voltage returned to normal when the system was grounded. For clarity the demonstrator voltmeter was flashed on a screen. The second mechanism, that of an arcing ground, showed that voltages as high as 10 times normal can be produced on an electrical system by alternately making and breaking a ground connection. This arcing ground could occur in many ways—a sputtering contact or a motor bearing failure which allowed a high spot on the rotor to rub a stator coil. The overvoltages on a grounded neutral system due to an arcing ground are greatly reduced.

Information was presented showing the relationship between time-to-failure for insulation and impressed voltage stress. Each time the impressed voltage is increased one-third the time-to-insulation—breakdown is reduced by about a 10 to 1 factor.

Solid neutral grounding is recommended for systems up to 600 volts and resistance grounding for voltages over 600.

Mr. Hobbs related three cases of multiple insulation breakdowns that occurred at Corner Brook. Mr. Hobbs has plans under way which when executed will make available short circuit KVA and will provide grounded neutral systems at 600 volts. He is considering the use of grounding transformers for 2.3 KV and 4.6 KV.

These two papers concerned a subject of special interest to me. Bowaters Southern Paper Corp. has an electrical distribution system that is grounded at all AC voltage levels—440, 2300, 4160 and 13,800.

Mr. John Eyton of Abitibi introduced several comments. In 20 years he has experienced only four cases of multiple insulation failures definitely established as overvoltages due to an arcing ground. Normally the breakdown is due to deterioration. At one of their mills two unit substations are now being installed with grounded neutrals; however, disconnect switches are being installed in the neutrals.

In addition, Mr. Eyton mentioned that they were using Allen ground detectors and found that accidental grounds can be located rather quickly with this device.

Mr. E. A. Crawford of Continental Paper mentioned the delta, open-delta argument for delta connections. This was answered by the argument that space requirements are forcing all of us to three-phase unit substations and that a transformer failure results in the entire unit being out of service.

THEIR PAPERS ARE REVIEWED BY MR. OSBORNE IN THIS ARTICLE

AUTHORS AND SPEAKERS at Engineering Conference in Montreal and what is said about their papers in this article (l to r): GEO. C. EHEMANN, *Plant Engineer at Ohio Boxboard, and* R. C. BERGER, *General Electric Co., Cleveland*—"clear, comprehensive presentation" of feed-back control systems as tension regulators.

STERLING SKINNER, Asst. Chief Engineer of Beloit Iron Works,—"we now have a better understanding of differential paper machine drives."

R. F. (Dick) SORENSON, Elect. Eng., Union Bag & Paper—"in efficient manner reported analysis of sectional drives down time."

GEORGE P. HOBBS, Assistant Chief Engineer, Bowaters Newfoundland Mills—"a timely and controversial subject (Grounded vs. Ungrounded Power) well handled by him and Mr. Kaufmann."

AL O. MORTENSON, Chief of Power, Maintenance and Planning, St. Regis Paper, Pensacola—"his committee has done a monumental work."

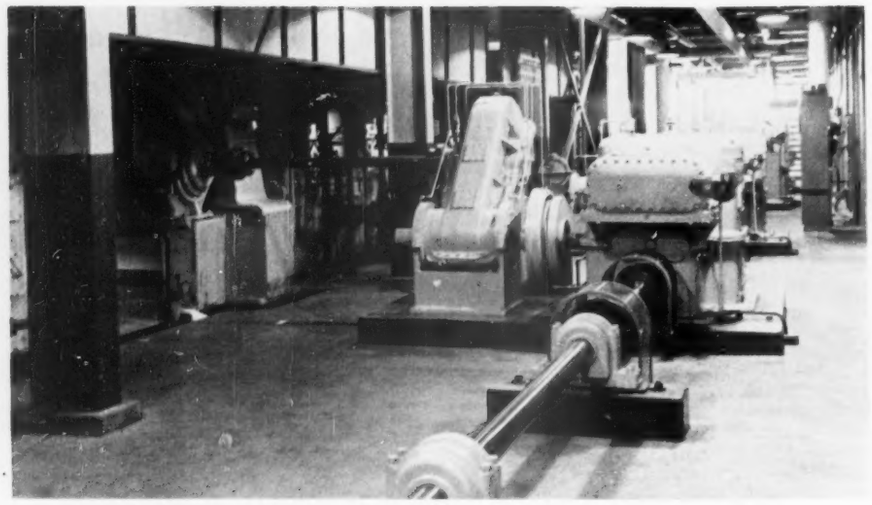
ENGINEERING ANALYSIS OF DOWN TIME OF ELECTRIC SECTIONAL DRIVES—by R. F. Sorenson, Electrical Engineer, Union Bag & Paper Corp., Savannah, Ga.

Mr. Sorenson, in his direct and efficient manner, reported his engineering analysis of down time on five paper machine section electrical drives.

Much has been heard about the merits of electric sectional drives and about the various troubles encountered in their application; however, accurate records have not been available to make useful appraisals and comparisons. This report showed that records could be kept and were of value as an aid in analyzing and controlling lost time, improving interdepartmental relationships and improving the attitude of operating electricians. Records will provide a basis for future comparisons with other mills in the industry and with other types of drives.

Twelve mills were asked to participate in this program of supplying data and keeping records of their machines. A standard form for reporting lost time was developed. Records tabulating the types of troubles, their relative importance and their trends from period to period provide a means of bringing problems into the open. These records also invite more accurate assignment of lost time. No problems can be effectively attacked until it is accurately defined and then assigned to the department that can control it. Records give electricians, who can control electrical lost time, a base from which to operate and an incentive to improve.

The mills will be interested in knowing if its lost time figures compare favorably with other similar mills and how it stands on individual items that can cause lost time. The records can be of greatest im-



WHAT BELOIT'S SPEAKER DESCRIBED AT MONTREAL

COMPONENTS of Beloit-patented Differential Drive on Weyerhaeuser Timber Co.'s new containerboard 216-in. Fourdrinier Machine at Longview, Wash. (for other pictures and details see Feb. 1953 issue of PULP & PAPER—page 34). Unit in foreground is smoothing press drive and blending into distance are units for dryers, breaker stack, size press, calenders and reel. There are other units for couch and presses on this machine. Main line shaft drive is 1600 hp. geared turbine and. Whole drive is capable of operating at speeds of 150 to 1500 fpm, or—with slight changes—even greater speed.

portance as an aid in analyzing and controlling lost time.

Graphs were shown how one mill used the data from the records as a control over its lost time. The program was started in this mill July 1951. The graphs represented the average of four kraft machines and one board machine in six month periods. The average lost time decreased from 274 minutes per machine per month to 101 minutes per machine per month and has remained a low level since that time. There are two reasons for the decrease: (1) Increased effort on the part of the electrical department, and, (2) proper assignment of lost time formerly included in "draw variations" and "miscellaneous" columns.

Mr. Sorenson urged all mills to take advantage of the benefits that can be realized from this program and invited all mills who can do so to supply data on down time so the sub-committee can arrive at its goal. The work of this subcommittee will continue—it will be of great interest to all of us in the industry.

SELECTION OF CHIPPER DRIVES—Discussion Meeting (led by the author, Mr. Osborne)

I read the second Progress Report of this sub-committee. This report outlined the initial study, the development and circulation of the questionnaire and the work of the sub-committee at Atlanta on Sept. 22. Copies of minutes of the Atlanta meeting were distributed and discussed. The formula for determining synchronous motor horsepower has been fixed. Synchronous motors should have a pull-out torque of 250 percent.

It was of interest to note that the average maximum loading for induction motors is 14.5 percent of the chipper capacity and for synchronous motors is 20 percent of the theoretical capacity. One induction motor had a maximum loading of 46.5 percent of the capacity. Mr. Art Drew, a member of the sub-committee, from Southland Paper Mills, was questioned about this figure. He replied that he could not account for this unless it was because this was a four-knife chipper or because a variable speed drive was installed on the chipper feeder.

Mr. H. B. Barrow and Mr. Nat Wardwell were assigned to investigate the relationship between the horsepower-hours per cord and the rate of chipping.

Mr. R. R. Baker had tabulated the data received from the various mills. Copies of this tabulation were distributed and Mr. Baker read his preliminary report of the data. Replies were obtained from 40 installations in the U. S. and Canada of which 26 were induction and 14 synchronous motors.

The questionnaires were prepared to give a complete description of the wood being handled, the chipper and the motor drive. The questionnaires also included data on the power consumption for a measured run of wood during normal operation. Complete information was not obtained particularly in regard to the power consumption. The summary of the information collected was discussed. The synchronous and induction motor data were separated into two tables.

The cord was based on a solid wood content of 85 cu. ft. A tabulation gave the summary of the power data listed in accordance with the wood species. It was of interest to note that the horsepower hours per cord follow rather closely the shear values according to U. S. Forest Products Laboratory. For simplicity the wood species were divided into groups. The average, minimum and maximum power values were shown for the various groups.

Mr. G. E. Shaad (of General Electric Co.) presented his nomographic solutions for synchronous, normal-slip squirrel cage and wound rotor induction motors. It has been the intent of this sub-committee to develop such tools as these nomographs to present to the industry so that chipper motors can be applied with intelligence.

Mr. Shaad made certain assumptions or approximations in order to simplify the construction of these nomographs:

1.) Maximum allowable slowdown is from 97 to 85 percent synchronous speed for wound rotor and 98 to 90 percent for normal slip induction motor.

2.) Average torque for induction motors while chipping maximum log is 165 percent.

3. Average hp at synchronous speed is taken as minimum thermal rating of all motors.

With a given set of conditions, these nomographs may be used to select hp ratings for synchronous, wound rotor and induction motors. When a review of these recommended ratings is made together with several additional considerations such at cost, available power systems, plant power factor, space, expected production and maintenance required, the mill management or consulting engineers will be guided to the proper selection of the drive.

It is felt that nomographs will give more useful information easier than formulae. For example, if the motor rating is changed, it can quickly be seen how this change affects production and other factors.

Mr. Shaad and Mr. Baker have both done excellent work on this sub-committee This sub-committee plans to have a final report ready for the next Engineering Conference.

A TRIO AT ELECTRICAL SESSIONS

RUDY O. HERRIG (left), Midwestern Mgr. for Reliance Electric & Mfg. Co.; W. V. KNIGHT (middle), Supt. of Maintenance and former Electrical Engineer at Gaylord Container Corp., Bogalusa, La., and FRANK A. DENISON Jr. (right), Reliance Electric's big gun in the booming paper industry of the Southwest. Mr. Knight was among old friends because he directed installation of the first Harland drive in the U.S. on Gaylord's No. 5 machine (164 in.) in 1924. Reliance has Harland rights in U.S.A.

DISCUSSION OF CABLE REPORT—by A. O. Mortenson, Chief of Power, Maintenance and Planning, St. Regis Paper Co., Pensacola, Fla.

Mr. Mortenson made what he thought were his final statements on "Electric Wire and Cable" to the Electrical Engineering Committee and to Tappi in general. For three years, Al Mortenson and

his sub-committee have done a monumental work in preparing cable recommendations for use of the pulp and paper industry.

Mr. Mortenson had published his recommendations in the Aug. 9153 issue of TAPPI. The present trend for improved reliability is toward cables not requiring potheads such as synthetic rubbers and varnished-cambric interlocked-armored cables. With the elimination of potheads the trend is toward the simple radial-type distribution system which is less expensive and is simpler to operate.

The tables he published showed the recommended cable selection in terms of areas, exposure, voltage classes and installation methods. All of the cable types have been proved in paper mill service and are commercially available. It was recommended that the cables "be in accordance with the latest applicable IPCEA Specifications."

Differences were noted between American and Canadian practices in the use of paper-insulated cables. Although paper is an excellent cable insulation it has little mechanical strength, is susceptible to moisture absorption and requires extreme care in making proper terminations and splices. It is the lack of trained personnel to make splices and terminations that has led American industry to avoid paper cable. This is in contrast with Canadian mills who have trained personnel and have had good experience using paper-insulated cables.

The committee recommended that leaded cables have a hose jacket over the lead to prevent electrolysis or chemicals from damaging the lead sheath.

Savings in the order of 20 to 40 percent of cable costs are realized on 13.8 KV service if the system has a grounded neutral. There are additional savings using grounded neutral systems such as smaller conduits and less labor required for installation. This factor ties in very closely with the papers by Mr. Hobbs and Mr. Kaufmann.

The industry trends and practices:

1. Open cable installations.
2. Installations above ground.
3. Diminishing use of braided cables.
4. Increased use of rubber-insulated cables.
5. Use of interlocked-armored cables—installed cost 30 percent less than conduit.
6. Use of aerial cable on long runs.

The cable committee recommendations and tables will be made into data sheets for the use of the industry. These tables will be of value to all of us.

Comments on this work were made by Mr. Davis, President of IPCEA and chief engineer of Simplex Wire and Cable Co. I noted with interest the reply to my question that all of the cable manufacturers are studying the problem of microbiological deterioration of rubber cables.

The sub-committee completed their job and deserve a "well done" from all of the electrical men in the industry. Mr. Mortenson will terminate the committee work, but will remain as an official cable expert in the Electrical Engineering Committee and will add to or modify the data sheets as new products or practices appear.

PROMOTED IN GENERAL ELECTRIC

G. E. MEN recently promoted (l to r): WILLIAM V. GOUGH, Manager of Light and Medium Industry Sales in Schenectady, which includes paper (he was heading printing and publishing sales).
DONALD PUTNAM, promoted to Manager of Industrial Equipment Components Sales, which includes most industries served by G.E., after heading Pulp, Paper and Lumber Sales in Schenectady.
GEORGE E. SCHAAD, new Manager of Pulp, Paper and Lumber Application Engineering.
WALTER G. BLOOMQUIST, Secretary of the Engineering Division of Tappi, promoted in G. E. to Mgr. of Industrial Power Sponsor Unit.
RAY E. GRIBBS, Mgr. of User Industry Sales in New York City.
TED R. RASTALL, who succeeded Mr. Griggs as Paper Mill Sales Engineer in New York City.

General Electric Boosts Key Paper Men

SEVERAL KEY PROMOTIONS in General Electric Co. have radically shifted top personnel dealing with sales and service to the pulp and paper industry. Familiar faces appear in bigger jobs—new faces of G. E. specialists moved in the ranks behind them.

Curious sidelight on all these shifts and advances is how three General Electric men with Kansas backgrounds have found themselves today devoting their talents primarily to pulp and paper—an odd twist of fate in this great company.

Donald Putnam, who has made many industry friends coast to coast during his tenure as manager of pulp and paper and lumber industries sales, has been promoted to manager of industrial equipment components sales, headquarters in Schenectady.

Pulp and paper will still be among his interests, along with almost all other industries served by G. E. But G. E. recognizes pulp and paper as one of its biggest of all markets.

MATTHEW T. FINN, Jr., who is new manager of pulp, paper and lumber industries sales for G.E.

Moving up into Mr. Putnam's former position is *Matthew T. Finn*, Jr., transferred to Schenectady from Chicago, where he was industrial sales engineer for paper mills and converters, rubber, food and automotive plants in the Chicago area.

William V. Gough has been appointed manager of light and medium industry sales in Schenectady, which embraces the paper industry and Matt Finn's department. He formerly headed sales in printing and publishing.

George E. Schaad has been appointed manager of pulp, paper and lumber application engineering, based in Schenectady, and will serve under *George Knapp*. Mr. Schaad previously was an application engineer specializing in pulp and paper.

Ray E. Griggs is now manager of user industries sales in New York City, where he was formerly paper mill sales engineer. Moving up as paper mill specialist is *Ted R. Rastall*, who formerly was printing equipment sales engineer. These New York City posts are important in this industry because of the concentration in that city of paper company headquarters and of consulting engineers.

Walter C. Bloomquist, secretary of the Tappi Engineering Division, has been made manager of the industrial power sponsor unit of General Electric at Schenectady, where he had been an application engineer in the industrial power division. *R. H. Kaufmann*, industrial power engineer who gave a paper at Montreal, likewise advanced to a managerial capacity for power plant services.

Mr. Putnam was born in Fargo, N. D., son of a Vermont-born music professor, and Don graduated from North Dakota State. He has been with General Electric since 1937.

Mr. Finn is a native son of Chicago, graduated in mech. eng. from U. of Illinois in 1942 and joined G. E. in the Windy City. Later he was called to Schenectady, moving back to Chicago in his recent sales post in 1948.

Advancing into Matt's former position serving paper and other types of plants in Chicago area is *George Grabot*, a sales engineer in that office.

Mr. Gough was from Kansas State, Mr. Schaad from Kansas U. and Mr. Griggs, while he graduated from U. of Utah, came from Kansas before moving to Salt Lake. Mr. Rastoll, a Jerseyite who still lives there, graduated from Rutgers.

Three Machine Advances Since War Are Cited

What are the greatest advancements made on paper machines since the war?

After the talk by Sterling Skinner at Montreal on differential drives for paper machines, this question was put to him and his Beloit colleagues, who have set an amazing record for number of machines built in that period. They named three:

1. Application of the differential drive.
2. The pick-up felt.
3. All new things done with suction rolls—picking up the sheet, turning of roll in any position, air bleed principle of operating.

First stories on these developments have appeared in PULP & PAPER—on the differential drive at Lee Paper (Feb. 1952 issue), the pickup felt at Hudson in Palatka, Fla. (April 1952) and other stories subsequently.

First Beloit-patented differential drives went in Lee Paper Co. and I. P. at Moss Point, and other full machine drives have gone in Weyerhaeuser at Longview, Halifax at Roanoke Rapids and two mills in Finland, one in Norway. West end only drives are at I. P. in Georgetown and Alton (Ill.) Box Board.

The pick-up felt was pioneered at Crossett in 1947, with Crown Zellerbach at Port Angeles, Wash., Palatka, Fla., Franklin Va., West Monroe, La., Roanoke Rapids, N. C., and other mills following suit.

WHY MODERN KRAFT DIGESTERS CORRODE

Partial Blame is Placed on Changes in Steels

By James R. Lientz

Manager, Pulp & Paper Div., Union Bag & Paper Corp., Savannah, Ga., and Chairman of Tappi Chemical Engineering Committee

"BIG 3" OF U.S. CORROSION STUDY

THIS TRIO officiated at head table during Digester Corrosion sessions in Montreal Oct. 28 (l to r): JAMES R. LIENTZ, author of this report for *PULP & PAPER*, and Chairman of Tappi Chem. Eng. Committee and Mgr. of Union Bag's Pulp & Paper Division; NICHOLAS SHOUMATOFF, Chairman of Corrosion Subcommittee and Process Engineer for West Virginia Pulp & Paper, and HERBERT O. TEEPLE, Secretary of the Subcommittee and Corrosion Engineer in Development and Research Div., International Nickel Co.

CORROSION IN ALKALINE DIGESTERS—kraft and soda alike—and the constantly increasing efforts to develop a reasonable solution to this ever increasing problem provided a mutually interesting subject for discussion to the many Canadian and American engineers attending the Eighth Tappi Engineering Conference at Montreal, Oct. 26-28.

The highlight of the week—insofar as digesters were concerned—was reached Oct. 28 when the latest available information in both Canada and the United States was presented under the sponsorship of the Tappi Chemical Engineering Committee and its Digester Corrosion Subcommittee.

Of particular interest to all engineers was the presentation of the report "*Promising Indications of the Causes of Corrosion in Alkaline Pulping Equipment*" by C. B. Christiansen, task force leader of the Pulp and Paper Research Institute of Canada. Since the entire Canadian kraft industry has participated in the study under the able leadership of the PPRIC, the mass of data available has provided much information which will help explain the basic causes of digester corrosion.

Mr. Christiansen presented the hypothesis that two distinct sets of forces are actively causing the wasting away of digester steel. One set combines to form primary corrosion resulting from the interaction of wood, liquor, and steel during the cooking process. The secondary effects result from the presence of scale, variation in steel, fabrication methods, digester design, and certain operating practices. These determine the major corrosion patterns found in digesters.

The conclusions of the Canadian group that there are two distinct sets of forces causing corrosion was interesting specially because it indicated that all the extensive studies have tended to corroborate what had previously generally been considered were causes.

Mr. Christiansen was ably assisted in his presentation by Mr. Sol Gerstman, a task force colleague at the PPRIC, who outlined the broad scope of the metallurgical investigation involved, and Mr. John B. Lathrop of Arthur D. Little, Inc., Cambridge, Mass., who presented the chemical hypothesis developed from the mill data collected by the task force.

Since there has been close liaison between the Candian and American groups, as well as with groups in other countries, even more experimental data will be available for use in the further expansion of the chemical hypothesis.

Mill Experience in U.S.A.

An up-to-date summary of mill experience in the United States was presented by H. O. Teeple (International Nickel Co.) and Nicholas Shoumatoff (West Virginia Pulp & Paper Co.) in their paper "*Comparative Analysis of Digester Corrosion Measurements—Summary Report No. 1.*" This paper summarized an analysis of 37,000 wall thickness measurements from 89 digesters in 12 different mills.

The data were accumulated under the supervision of the Tappi Chemical Engineering Committee and the Digester Corrosion Subcommittee from 29 mills. The bulk of the statistical work was carried out by the Armour Research Foundation of the Illinois Institute of Technology under Tappi Research Grant No. 50. The fine cooperation of the participating mills made possible a very complete statistical analysis of many factors thought to affect digester life.

This study seems to highlight the fact that there have been definite increases in corrosion rates of ordinary steel digesters installed in the last ten years, undoubtedly resulting from changes in steel composition. It was pointed out, however, that this change does not constitute the only cause of the severe corrosion being experienced by mills everywhere.

The Shoumatoff-Teeple report from 89 digesters in 12 mills revealed that ordinary carbon steel vessels installed since 1941 corroded more rapidly than those installed from 1930-41; that high tensile carbon-silicon steels are corroding more rapidly than ordinary steels; that modern rimmed steels do not corrode less rapidly than modern ordinary steel, but do corrode more rapidly than old rimmed steel; that alloy-protected vessels corrode less rapidly than those of carbon steel. But the magnitude of corrosion variation possibly due to process variables was much less than expected.

Severe localized attack generally exists in kraft digesters and this was mainly associated with physical action near the liquor level and the blow nozzle.

One of the 1954 objectives of the Tappi group is going to be to establish a mechanism for continuously receiving and disseminating data from the mills.

While all the discussions at Montreal concentrated on steel and steel alloys in kraft digesters, a New York Paper Week paper will be exclusively on the subject of brick linings in kraft digesters, which have a long history of experience in old digesters, as well as being among newer installations in new mills or expansion.

Without question, the work of both the Canadian and Tappi groups will eventually bring to light the many causes of digester corrosion and various steps which may be taken to minimize and control corrosion in individual mills. Certainly this is the definite objective of all those associated with the problem.

Hazards of Failures Emphasized

The most urgent need for all mills to recognize the hazards of digester failure and the further need for careful safety evaluation in individual mills were strongly emphasized in the paper "*Safety Evaluation and Protection of Digesters*"

Background of the Author

Once again PULP & PAPER presents this review of corrosion research news from the Engineering Conference in Montreal, written especially for its readers by a veteran member of the Tappi Digester Corrosion Subcommittee, James R. Lientz. Mr. Lientz is also chairman of Tappi's Chemical Engineering Committee, parent body for that subcommittee, and therefore has been a leader in organizing and furthering the kraft digester investigations.

A native of Los Angeles, raised in Kansas City, Mr. Lientz earned b.s. and m.s. degrees in chemical engineering at the University of Michigan, the m.a. in 1937. He was manager of Swenson Evaporator's Pulp & Paper Division when he joined Union Bag as chief chemist in 1946 as general superintendent. He previously had spent two years at Savannah before the war as chief chemist.

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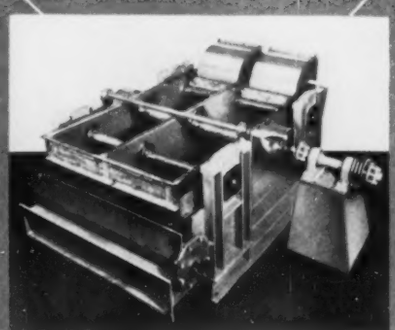
Ideal for removing the knots from 80 to 100 tons of 1½% *sulphite* per day — 150 tons or more of 2½% *groundwood* or *sulphate*.

Removes wet strength paper, cellophane, paper clips, rubber bands, etc. from *waste paper stocks*. Turns out big volume of clean stock at .06 HP per ton.



Delivers *brown stock* to the washers free of knots and chips, increasing washing efficiency and black liquor recovery. Handles 125 to 150 tons of 1.3 to 2.25% stock per day, using 3HP or less.

Screens big volumes of *board* stocks prepared by refiners, defibrators or masonite guns with high efficiency at low power cost. The standard Screen for removing the knuckles, cockle burrs and other unwanted material from *strawboard*.

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BRICK MEN WILL BAT NEXT

ED TUCKER (left), President of Stebbins Engineering & Mfg. Co., Watertown, N. Y.; TOMMY KETTLES (middle), Manager of Canadian Stebbins Eng. & Mfg. Co. Ltd., Castle Bldg., Montreal, and LLOYD PUBLICOVER (right), Mr. Kettles' assistant in the Montreal office. These Stebbins men were happy to confirm at Montreal that at the kraft digester corrosion session during Paper Week in New York, the carbon brick advocates will have their innings. Their's will be one of at least five papers given on corrosion at February meeting.

by W. B. Parker, assistant chief engineer, Boiler Division, Hartford Steam Boiler Inspection and Insurance Co., and H. M. Canavan of Mutual Boiler and Machinery Insurance Co. This paper emphasized the need for top mill management as well as mill engineers to become interested in this serious problem. It noted various ways of evaluating and measuring digester thicknesses but said the most desirable means was by Audigage or thickness measuring instrument, obtaining readings at regularly spaced intervals over the entire shell.

Spirited discussion on all papers, as well as on the many various appraches to the solution to this interesting problem, took place throughout the week. It was announced by Mr. Shoumatoff, chairman of the Digester Corrosion Subcommittee, that at least five additional papers on digester corrosion would be presented at the Annual Tappi Meeting in Feb. 1954 in New York.

Mr. Shoumatoff also announced that a new monograph "*Digester Inspection Procedures*" had been completely drafted during the year by the committee members and was now being edited by the Tappi staff. This monograph, which will be published soon, will serve as a most valuable tool to all engineers in kraft and soda mills throughout the world.

The Digester Corrosion Subcommittee is now composed of 22 members representing all sections of the U.S. and Canada. The 15 members present at the Montreal meeting who participated wholeheartedly in the entire program

S. J. Baisch, Thilmany Pulp and Paper Co.; P. K. Bloch, Branson Instruments; H. M. Canavan, Mutual Boiler & Machinery Ins. Co.; C. B. Christiansen, Pulp & Paper Research Inst. of Canada; R. A. Davis, Chicago Bridge & Iron Co.; E. W. Keith, Penobscot Fibre Co.; J. R. Lientz, Union Bag & Paper Corp.; W. B. Parker, Hartford Steam Boiler Insp. & Ins. Co.; H. J. Peters, Lukens Steel Co.; N. Shoumatoff (Chairman), West Virginia Pulp & Paper Corp., E. W. Hopper, Crucible Steel Co. of America; Frank E. Hutton, Babcock & Wilcox Co.; C. W. Smith, Crossett Paper Mills; H. O. Teeple (Secretary), International Nickel Co. and B. Thomas, Stebbins Engineering & Mfg. Co.

Canadian "Task Force" Makes Report

As Herbert O. Teeple, secretary of the Tappi digester corrosion subcommittee pointed out (he's in corrosion engineering section of development and research for Inco)—the exhaustive study made by a Canadian "task force" in all its kraft mills differs from the Tappi study because it covers the industry's whole digester corrosion history in the Dominion while the Tappi study is concentrated on current corrosion.

A point of issue is whether corrosion is uniform over an area affected or whether it starts at a pinpoint and spreads. This was brought out by Claude B. Christiansen, Oregon-born and educated ex-superintendent and chemical engineer in both U.S. and Canada, who is project supervisor of the Canadian investigation.

In his report on the 15 mills surveyed in Canada, Mr. Christiansen stressed the point that further and more complete reports will be made at the annual meeting of the Canadian industry in Montreal Jan. 25-30, but some of the facts so far ascertained are:

That 60 percent found accelerated corrosion on automatic welds and many mills have gone to automatic welding.

That secondary corrosion troubles are given by cast steel fittings, and forged fittings generally have given good service.

That the liquid filling inlet, if of variable type, often develops corrosion. And so does the swing type pipe for liquor filling if consistently directed to one side. Feeding to center avoids corrosion.

That many interesting patterns of corrosion result from scale.

Sol Gerstman, metallurgist of the Canadian Bureau of Mines, told how he and H. J. Nichols, another metallurgist, served with the task force, visiting mills and accumulated 42 samples of primary corrosion which are being codified as to chemical and gases analyses, and metallurgic and spectographic tests, and they are being correlated as to variables in one digester, in all digesters in all mills, and on all mills. The work was to be finished by late January.

CLAUDE CHRISTIANSEN —reveals some secondary causes.

Upon completion it is expected it may be possible to recommend the types of carbon steel most resistant to digester corrosion.

John B. Lathrop, of operations research, Arthur D. Little Co., Inc., Boston, Mass., reported on work that consulting firm is doing for the task force—analyzing the long periods of service, getting average corrosion rates of each station in a digester and mill averages, measuring a corrosion rate and corrosiveness according to an accepted Swedish standard, developing a chemical hypothesis remarkably in agreement with mill data gathered.

Besides Messrs. Christiansen, Lathrop, Gerstman and Nichols, others serving on the Canadian task force are from the Canadian Pulp & Paper Research Institute or associated with it. They are:

Dr. Walter Mueller, corrosion chemist; W. C. Grater, technical aide; Dr. O. Maass, Institute executive and advisor; Dr. J. H. Ross, Montreal consultant; Dr. W. B. Campbell, advisor; Dr. F. H. Yorston, A. H. Pichette, K. Kalnins and V. Oja, all working on liquor analyses; H. V. Green, Peter Blyth, L. B. Hebert and R. Gosselin, serving on photo and illustration work; W. H. de Montmorency, equipment maintenance; Robert Knight, preparation of samples, and C. J. C. Potter, bibliography.

Norway Builds New Research Center

King Haakon of Norway laid the cornerstone of a new Norwegian Pulp and Paper Research Institute building at Gaustad, on the outskirts of the capital, Oslo, Norway, recently. To be finished in 1954, this Institute headquarters is expected to keep Norway in the forefront of worldwide technical progress in this industry.

It is being built alongside a 12-million-kroner Central Institute for Industrial Research. At the ceremony the king was presented with two copies of a single book made especially from a single identified tree. The book tells of Norway's 90 mills, its capacities for 800,000 short tons of groundwood, 600,000 tons of sulfite pulp, 110,000 of kraft pulp, 600,000 of paper and paperboard and 110,000 of wallboard. One copy the king kept and the other went into the cornerstone with 1953 samples of pulp and cellulose.

The Norwegian Institute was founded 25 years ago. Last year it added an Institute for Woodworking and Wood Technology and supports the Norwegian Forest Research Institute. The new home of the institute is to be a 64,000 sq. ft. structure with much research equipment of the latest type.

The largest wood processing concern in Norway, A. S. Borregaard, recently completed another new laboratory of its own for research in chemical by-products of woodpulp.

The big Central Institute at Gaustad will have 118,000 sq. ft. and is to be finished in two years. Besides the separate pulp and paper lab alongside it, there will be two smaller buildings. Funds for the Central Institute were largely obtained from profits from the State Soccer Pool in Norway.

WOOD PULP
PAPER

Offices and representatives in 60 cities in the United States, Europe, Latin America, Africa, and Asia

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295 MADISON AVENUE, NEW YORK 17, N. Y.

MACHINE ENGINEERS TRADE NOTES

JOHN LYALL (left), of Armstrong Cork, new Vice Chairman of Engineers, trades a few comments with JOHN RAY CURTIS (right), Scott Paper Co.'s expert on paper machine design, just after Mr. Lyall had presented a new contract for cooperation of machine builders, wire weavers and operators.

HOSTS TO ENGINEERS IN MONTREAL

AMONG TOP EXECS of Dominion Engineering Works who were hosts to the Engineering Conference were (l to r); STANLEY C. WILLIAMS, Chief Engineer of Paper Division; ALEX ERIC STEWART, Development Engineer, and HAL E. CUNNINGHAM, Vice President of Dominion and Manager of Paper Div.

DESCRIBE A NEW WASHER HOOD

HAROLD HUSEBY (left), Bleach Plant Supt., The Northwest Paper Co., Cloquet, Minn., also told of success of Teflon packings for chlorine valves and a home-made gunk catcher. ELDON GAMBLE (right), Mgr. of Mechanical Service Dept., same company, gave Mr. Huseby moral support.

Engineers Plan Pollution Research; Montreal Springs Other Surprises

Among Surprises: Facts About Corrosion and Drying

STREAM AND AIR POLLUTION of pulp and paper industries will be the next big problem to be tackled by the aggressive and hard-working Engineering Division of Tappi, if plans announced at Montreal bear fruit. The call has gone out for volunteers from mills and suppliers to work in the committee vineyards.

Judging from the engineers' diligence in pursuing the mysteries of recent accelerated kraft digester corrosion and the thorough jobs they have done with such projects as analyzing paper drying rates and requirements for chipper drives, and compiling valuable data on electric cable—well, it sure looks like that Ol' Debbil Pollution is in for the rassle of his life! When these engineers go to the mat with this industry bugaboo, it is expected to be a "new approach," to use an old cliche. It could well be the biggest project the organized engineers have yet attempted.

That's the biggest news to come out of their Eighth Annual Engineering Conference, Oct. 26-29, in the third largest French city in the world (after Paris and Marseilles). Registration of 520 men (the engineers scorn to count the wives, as other conventions do), made it their biggest meeting of eight, barring only the 1951 Savannah conference. But at Savannah, 160 delegates came from two big mills right in the city, and that made its registration of over 600 something like a biological sport.

Next year it's to be in Philadelphia—for the second time. Of course, in October.

40 Percent Were Mill Men

There were 21 papers given in the plush salons of the Sheraton-Mount Royal and discussion sessions were well attended. Comparatively few were in the halls. As a matter of fact, about 40 percent of the attendants were mill men. Half of the ten engineering committees held "closed door" luncheons that must have been interesting, they dragged out so long. Even the expeditions to Mother Martin's and Drury's for exotic foods paled in interest!

Chairman Charles J. Sibler, Swiss-born chief engineer of West Virginia Pulp & Paper Co., can look back on a tenure as chief of the engineers which is replete with achievements and records for attendance and accomplishment. It was Mr. Sibler who announced the plans for a new project on stream and air nuisances and he appealed for volunteers.

Elsewhere in this issue, M. J. Osborne again reviews the electrical and power projects and papers at the conference and J. R. Lientz records the last words on kraft digester corrosion—perhaps the most costly and desperate problem the engineers have tackled until their dig into pollution.

One of the big surprises of this Engineering Conference was some of evidence brought out about varying digester corrosion rates, in connection with steels used, and Mr. Lientz discusses these.

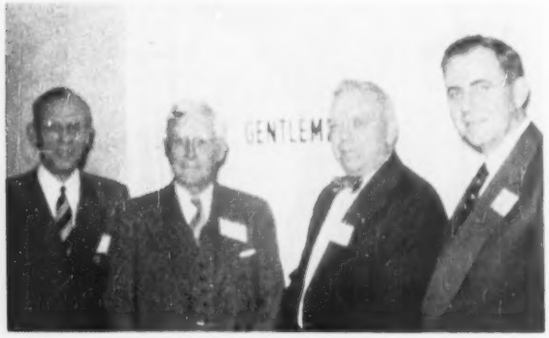
Mr. Sibler announced the first monograph on digester corrosion will be issued next year. And the carbon brick boys—mostly silent during the many discussions at recent meetings of steel linings—will have their innings in a new paper to be given in New York in February.

Rating as one of the outstanding papers of the meeting—though a controversial one—was John D. Lyall's sally into a no-man's-land of virgin study—"*Mechanics of Stress and Strain Occurring to a Fourdrinier Wire.*" He earned his election to the newly created position of vice chairman of the Engineering Division, putting him in line to be next Chairman. Mr. Lyall, papermaking project engineer for all Armstrong Cork mills, came up with a new formula that could lead to radically revised designs of wires, drives, roll proportions. It could even mean new revolutionary machine designs. There were objectors—however, more of this later on.

Another Surprise—Drying Rates

Another project which reached a surprising and significant stage at Montreal was one headed by A. E. Montgomery, western manager of J. O. Ross Engineering, on rates of drying of individual dryers through a machine. Unexpectedly, tests on 35 different machines show many mills may be overdrying and that a large proportion of dryers are being used to remove the last one to 5 percent of moisture.

The sound leadership of Mr. Montgomery was again demonstrated in this session, chairmanned by Curt Young, Riegel's chief engineer. While some reports were on things done four or five years ago, a



GENTLEMEN INDEED—FRIENDS, TOO

PROVING THEY ARE gentlemen and friends as the door sign says, and the anti-trust laws notwithstanding, here are four rival machine builders (l to r): ALAN HYER, Bagley & Sewall; S. A. STAEGE, Black-Clawson; SAM BRATTON, Pusey & Jones, and ELMER MACKLEM, Beloit Iron Works.

disconcerting disclosure was that about 80 percent of machine drying is on a constant rate and then drops off sharply. It was indicated that methods of sampling, particularly on the wet end, may not be good. This project should help engineers to more intelligently locate breaker stacks, size presses, etc.

Standardize Machines, says Ambridge: —But American Builders Vote "No!"

A PEAK POINT of the week was the luncheon address of an erstwhile but "reformed" engineer, Mexico City-born Douglas W. Ambridge, president of Abitibi Power & Paper, now operating coast to coast since absorption of British Columbia Pulp & Paper. He surprised many of his audience by plumping for standardization of mill equipment and machinery on the basis that "precious engineering man-hours are being wasted in arguing over sizes of headboxes and types of bearings."

"We have a serious shortage of imaginative designers of machines, with thousands in defense industries. Too many engineers are working on machinery—and the first thing to be rationed in a war would be these engineers," said Mr. Ambridge.

Much could be done to simplify and standardize machinery, he contended, thus reducing their costs to the industry.

Mr. Ambridge made the opening kick-off of his argument a charge that prices of machinery are too high—comparing a $6,000 Cadillac to a $36,000 vacuum washer, a $72,000 winder and a $200,000 headbox and slice. But he reversed his field on this play, when he qualified:

"However, I do not know anyone who is making fabulous profits manufacturing machinery. They are employing too many engineers making the machines."

Polling some of the leading American manufacturers who heard this Ambridge argument, PULP & PAPER found most of them voting an emphatic "nay."

Said one: "Standardization is the antithesis of free enterprise. It won't work in the U.S.A. Canada's newsprint machines are all running 1,400 to 1,700 fpm and making almost exactly the same sheet because they are standardized. If we were as deep in newsprint manufacturing in the U.S., our machines would be running 2,500 fpm today and making new qualities of sheets."

Another: "We will go along with Mr. Ambridge in saying it is a good thing to take a hard look at what we are doing and see if we can't simplify them."

Another: "We are not convinced that Mr. Ambridge was really completely sold on his own theme—he seemed to be stretching a bit to make a point."

Karl O. Elderkin, vice president Tappi and v. p. and general manager of Bowaters Southern Paper Corp. was pinch-hitter for temporarily ailing Tappi President George Pringle at this luncheon. Mr. Elderkin expressed pleasure that the engineers had come to the Canadian metropolis where he had spent much of his life. Incidentally, both top officers of Tappi are former Montrealers, as Mr. Pringle, now vice president of The Mead Corp., is a graduate of McGill. An eye infection kept him from the conference which he helped to found and formerly chairmanned.

W. Taylor-Bailey, president of Dominion Bridge Co., issued a formal invitation to the delegates for the final day to make plant tours of his company and the adjoining Dominion Engineering Works in west Montreal. At the latter plant, which started making paper machines in 1920, delegates saw some of the finest machine tools in America. They also viewed one of the most diversified factories in America, also making power units and hydraulic power generators.

And at Dominion Bridge, whose history goes back to 1862, they saw a plant making equipment ranging from digesters and blow tanks to pulpwood stackers, and boasting especially high quality welding equipment.

Speaker Wants U.S. Tariffs Lowered

A white-haired Canadian who has been a financial editor, a dramatic critic and a teacher, Dr. B. K. Sandwell, of Toronto, was dinner speaker, and like Mr. Ambridge, when he got through with his largely American audience, not all were in agreement.

Dr. Sandwell came out strongly for further lowering of American tariffs and admission to U.S. of more manufactured

THEY DROPPED SOME BOMBSHELLS

DOUGLAS W. AMBRIDGE (left), Pres. of Abitibi Power & Paper, Toronto, urged standarization of equipment to meet shortage of engineers and cut costs, but American manufacturers saw a threat here to free enterprise and technical progress. A. E. MONTGOMERY (right), Western Mgr., J. O. Ross Engineering Corp., whose drying project report caused a mild sensation by indicating some of last dryers on machine may be wasted.

THEY FAVORED AUDIGAGE USE

W. B. PARKER, (left), Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn., and H. M. CANAVAN (right), Mutual Boiler & Machinery Insurance Co., Boston, teamed together for a paper on safety evaluation of digesters and urged management to take interest in digester safety.

THEY GAVE PAPERS AT MONTREAL

(Top, l to r): RICHARD E. DURST, Univ. of Maine, on pipe friction project; RAYMOND C. MAX, Factory Insurance Assn., Milwaukee, on fire protection; MILTON V. JONES and CARL W. ZIEGENBUSCH, both of Mead Corp., Chillicothe, on pipe line cleaning; GEORGE R. LYDICK, Beckett Paper, on non-corrosive materials.

(Below): JAMES M. McALEAR, Mason-Neilan Regulator's Pulp & Paper Mills Dept. Mgr., on a new drying control system; E. C. KORTEN, Hartford Steam Boiler Inspection and Insurance Co., Hartford, Conn., on the ASME Code; H. A. STOESS, Jr., Pulp & Paper Dept., The Fuller Co., on handling chemicals; PERCY L. NELSON, Chas. T. Main Inc., and H. R. Emery, Jr., St. Regis, Deferiet, N. Y., teamed up on a new power plant report.

foreign goods. He asserted that the U.S. is "becoming more and more short of its raw materials" and "your forests are thin, while ours are thriving."

He pictured a bright future for Canada, with its population growing, pointing out that it dropped from 8.7 percent of the continental population in 1871 to a low of 6.6 in 1900 and is now back to 8.4 percent.

There were several expressions of agreement, however, with Dr. Sandwell's closing statement that the U. S. and Canada "should get together to further their common interests."

Measuring Stress and Strain Might Bring New Machine Designs

BACK TO THE TECHNICAL program and more about John Lyall's controversial paper.

He reported on an engineering investigation using electric strain gauges to measure relationships of stress and strain that occur in a Fourdrinier wire fabric as it passes around a machine. A new method to compute bending and tensile stresses and the stress range to which the metal is subjected was developed. Fatigue data was reviewed to establish the stress range a wire may be expected to endure.

Mr. Lyall aimed to give a precise method for evaluating wire runs, for predicting effects produced by wire specification changes, and to determine size of rolls required around a Fourdrinier for optimum results, all toward determining the best combination of parts, and perhaps even less costly paper machines.

With this procedure it is hoped new machine designs will not be put aside because of fears of experimenting and that a prediction can be made of results of changes right on the drawing board.

While the work at Armstrong Cork was on 18 mesh wire for insulating board, Mr. Lyall contended data could be factored and applied to any wire. Some listeners questioned results on a 75-mesh wire running at high speed of 1500 fpm.

Interesting comments made by Mr. Lyall: Wear on a wire is nearly all at the wire knuckles, it is here failures occur and it breaks as though brittle. Rubber covering will increase tractive effort of a roll 400 to 500 percent. Many strains are set up in weaving and "locked up" in the wire. Going to wider diameter wires tends to give longer life. If use of stainless steel wire is desirable, a wire run can be designed that would have only one-sixth the bending strain of a phosphor-bronze wire run. Outside wire rolls should be large, but those inside could be as small as table rolls, on basis of stress endurance data.

Mr. Lyall acknowledged assistance in the project by James Bergen and Richard Culp, of Armstrong.

Here is the result of informal queries by PULP & PAPER after the paper was given:

Some machine builders seemed very dubious—saying high speed machines must be considered differently, that stainless wires is an old idea already consigned to the ash-heap, that rubber-covered couch rolls will require a lot of grinding, and finally, that it is Utopian to dream of wire weavers and machine builders getting together in advance of designs.

But it is noteworthy that three different machine builders' representatives at the convention exhibited considerable interest. Apparently no wire people were present. Several mill men expressed hope the method will end some mysteries of wire operation and explain their experiences. All commenters conceded the limited nature of the work. But as the beginning of a new technique, this could be one of the big events of the 1953 conference.

WHAT SAVANNAH MILL ENGINEER DESCRIBED AT MONTREAL

PULP & PAPER picture of the Pulpwood Flume system at Union Bag & Paper Corp. mill in Savannah, described by JOHN R. FIELDING, U.B.'s Chief Construction Engineer. Its average capacity is 200 cords per hour. Another view of this flume and equipment was published last month in PULP & PAPER on page 94. There are two of these Lorain (Thew Shovel) gantry cranes mounted on rolling undercarriages, traveling on either side of the flume, and pulling logs from rail cars into flume. Other developments in this huge 85,000 cord-capacity woodyard: A 3,200 ft. long circular flume system floating logs to barkers; improved truck dumping; a giant Link-Belt rotary pulpwood distribution table supplying wood to 6 barkers; plows to regulate log feed from table; drag chain conveyor to each barker.

Other Papers at Montreal

BLEACH PLANT MAINTENANCE—Harold H. Huseby, bleach plant superintendent at The Northwest Paper Co., Cloquet, Minn., explained that its six year old Impco design plant has three systems —two stages for aspen kraft, three for sulfite and five stages for jackpine kraft. All are continuous except the last sulfite —a batch high density hypochlorite— which is preceded by acid chlorination and caustic stages. For aspen, stages are neutralized chlorination and high density hypo. For jackpine, stages are acid chlorination, neutralized chlorination (Hooker process), caustic, high and low density hypo.

Mr. Huseby described a new tight-fitting washer hood with black iron frame and Uscolite sheeting. It is in two sections, and each swings open on a shaft at the top, actuated by an air cylinder and convenient valve. Pulling only 700 cu. ft. through this washer is enough to remove all gas and moisture coming off hoods.

Teflon packing on chlorine valves solved sticking valves and completely ended all leaks. Using a pinch tube valve ended plugging by flakes and abrasive wear on milk of lime valves.

A home-made gunk catcher is a 6 in., 6 ft. long vertical pipe with short baffles for chlorine gas between evaporators and Flowrators. Chlorine leaves the trap pipe through the top, and once a month it is by-passed for cleaning out the tarry mass. If chlorine gas turned to liquid because of cooling or evaporator failure, it would carry the gunk into the Flowrator. To prevent this, chlorine is not brought to Flowrators until the system is ready to receive it and the room is always kept warm.

Welding of washer seams was abandoned in favor of a one inch lapped seam and holding facing on with half inch stainless bands a foot apart across the facing. The vacuum washer manufacturer now has a jig and technique to spotweld the bands.

A file clerk keeps track of lubrication dates for the entire system, and issues the orders to millwrights. For safety, maintenance men have locks for starters of any equipment they are working on.

PIPE FRICTION STUDY—Richard E. Durst, University of Maine, reported progress in this project. A suspension flow system has been means of determining friction head losses of long-fibered bleached sulfite of 2 to 6 percent consistency. Velocities range from 1.5 to 10 f.p.s. Stock formation seems to be a factor. A correlation using previous data gave results of nearly constant deviation of minus 70 percent regardless of pipe diameter, velocity or consistency.

NEW DRYING CONTROL—James M. McAlear, manager of the pulp and paper mills de-

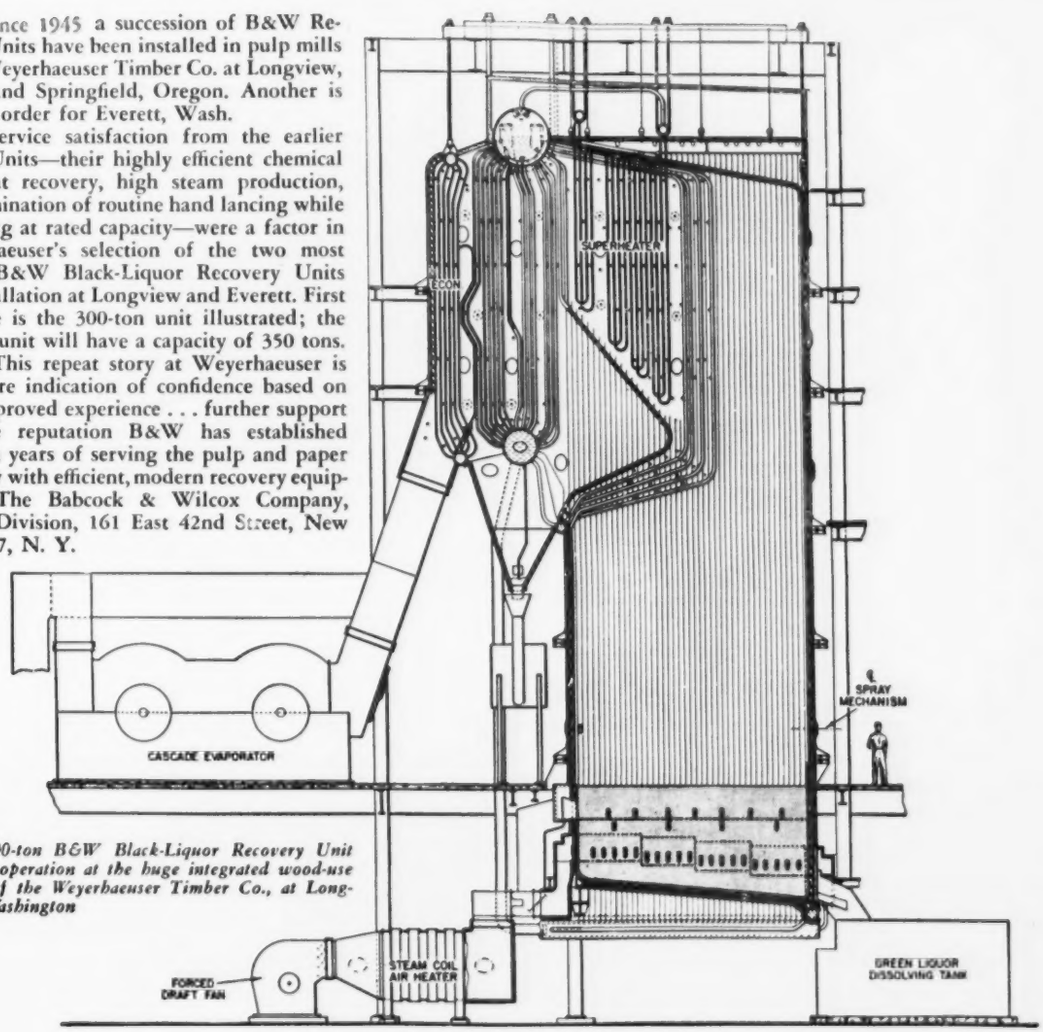
6 B&W RECOVERY UNITS SERVE 3 MILLS OF WEYERHAEUSER

PULP DIVISION

Since 1945 a succession of B&W Recovery Units have been installed in pulp mills of the Weyerhaeuser Timber Co. at Longview, Wash. and Springfield, Oregon. Another is now on order for Everett, Wash.

Service satisfaction from the earlier B&W Units—their highly efficient chemical and heat recovery, high steam production, and elimination of routine hand lancing while operating at rated capacity—were a factor in Weyerhaeuser's selection of the two most recent B&W Black-Liquor Recovery Units for installation at Longview and Everett. First of these is the 300-ton unit illustrated; the Everett unit will have a capacity of 350 tons.

This repeat story at Weyerhaeuser is one more indication of confidence based on service-proved experience . . . further support for the reputation B&W has established through years of serving the pulp and paper industry with efficient, modern recovery equipment. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.



New 300-ton B&W Black-Liquor Recovery Unit now in operation at the huge integrated wood-use center of the Weyerhaeuser Timber Co., at Longview, Washington

BABCOCK & WILCOX

P-774

partment of Mason-Neilan Regulator Co., Boston, said their search for better paper moisture measurement and control led to a device that would "average" rather than provide "spot" measurement. A pilot dryer with a separate steam source and a pressure controller maintaining dryer pressure is used. Moisture variations of the sheet produce different condensing rates of the dryer and the controller automatically varies a control valve position to supply new heat requirements. A pneumatic signal relays to a moisture recorder controller which raises or lowers the setting of the pressure controller to the main section.

Mills using this system report better quality and production. A board mill makes five tons more a day with less steam.

HANDLING CHEMICALS—H. A. Stoess, Jr., of Fuller Co., manufacturers of Airveyor systems, reported on methods and costs of handling chemicals, and operating advantages were taken into account. Types of storage and method of receipt and handling were discussed. This is a subcommittee of the materials handling committee chairmanned by William R. McNally, Link-Belt Co.

UNION BAG'S NEW WOODYARD AND FLUME—John A. Fielding, chief construction engineer of the big Savannah mill, discussed this flume, which was illustrated in a photograph published in the PULPWOOD SECTION of PULP & PAPER last month. Another view is shown on these pages. The flume handles 1,984 tons of wood per day in a mammoth new woodyard of 85,000 cords capacity.

Lorain cranes on rails, equipped with 4 ft. blades fixed to a boom, pull wood off r.r. cars into the flume on each side of a 1,000 ft. section at rate of 200 cords per hr. The circular flume is 3,250 ft. long. There are facilities for 200 r.r. cars a day.

He mentioned a remarkable huge Link-Belt rotary pulpwood distribution table—unique in this industry—which is supplying wood to six barking drums.

This flume can be increased to 4,400 ft. Sides of the flume are steel plate lined, 18 in. above and below normal water depth of 3 ft. 6 in. Hydraulic gradient is designed to produce a velocity of 5 ft. per sec., with actual drops of 7 ft. in maximum length and 3 ft. at corners, allowing for friction, etc. Actual velocity is 7 ft. per sec. at 45,000 gpm. Corners are held to 75 ft. radius. Water is taken from the seal pit on evaporators.

NON-CORROSIVE MATERIALS—George Lydick of Beckett Paper Co., Hamilton, O., reported interesting uses and changes in practice. Stainless and Monel are used more for tanks, piping and tubing. A special cement withstands ravages of salt cake and black liquor. Mastics can be built into successive layers over glass membranes in tanks, vats and large pipe. Asbestos cement pipe and fittings are more popular. More use of these materials increases their availability.

CLEANING PIPE LINES—C. W. Ziegenbusch and M. V. Jones of The Mead Corp., Chillicothe, O., made a report that amazed a lot of listeners because of its wealth of detail and information. Power winches at each end of a pipe can pull a bucket through until loaded and then reverse direction to empty it. Chemical systems involve fill-and-soak or pump circulation procedures. Jet hydraulic cleaning uses pressures of 800 to 2,000 fpm. Pig type hydraulic cleaning utilizes an object that will fit in the pipe and maintain shape under pressure, providing a seal so little fluid will flow past.

FIRE PROTECTION—R. C. Max, Factory Insurance Assn., dealt with fundamentals, beginning with plant construction and stressing good equipment and importance of employe fire brigades and training.

PLANT CONSTRUCTION TRENDS—F. M. Kraus of Stadler, Hurter & Co., noted how precast units are used as time and money savers and to beat the arrival of winter weather. Structural steel is a help toward flexibility of construction. Timber is a good frost insulator. Plywood is used for beams and walls. Prestressed concrete bears watching—advantages lie in quantity and repetition of typical members.

THE ASME CODE—E. C. Korten of Hartford Steam Boiler Inspection and Insurance Co., told of the Code development, enforced by cities and states. Its rules committee meets seven times a year to keep it up to date. A user's best counsellor, he said, is his insurance carrier. Welded piping causes trouble because it cannot always conform to Code and the enforcement authority is the proper clearinghouse.

ST. REGIS POWER PLANT—H. R. Emery, Jr., St. Regis, Deferiet, N. Y., and Percy L. Nelson, Chas. T. Main Inc., reported on operation of two 100,000 p.p.h. 875 p.s.i.g. boilers and a non-condensing 6,000 kw. topping turbine generator unit installed new at Deferiet in 1946. Turbine exhaust supplies all mill process and also a low pressure 5,000 kw condensing turbine-generator. A saving of $2.75 per ton of paper was reported over a similar quantity of steam and power produced previously.

HEAT RATE CURVES—J. Gottlieb of Westinghouse described performance curves of single and double extraction turbine generators and showed how they can be converted to heat rate curves and these can be used to calculate power costs. (For other reviews see articles by Mr. Lientz and Mr. Osborne.)

L to r: K. O. ELDERKIN, Vice Pres. of Tappi and Vice Pres. and Gen. Mgr. of Bowaters' Southern; CHARLES J. SIBLER, Chairman of Engineers and Chief Eng. of West Va. P & P; JOHN LYALL, elected to newly created post—Vice Chairman of Engineers—and Project Engineer, Armstrong Cork; and WM. R. McNALLY, new Chairman of Materials Handling Committee, and Link-Belt's Pulp-Paper Specialist.

New Leaders Move Up in Engineers

JOHN D. LYALL, project engineer in charge of papermaking operations for Armstrong Cork Co., Lancaster, Pa., has been named to the newly created position of vice chairman of Tappi's Engineering Division. He will be groomed to succeed *CHARLES J. SIBLER*, chief engineer of West Virginia Pulp & Paper Co., as the next chairman.

Presumably the new chairman will take over at the division's 9th annual Fall Conference, slated for mid-October 1954 at Philadelphia in his home state—the first city to be a host to the engineers for a second time since the Conference began in Milwaukee in 1946.

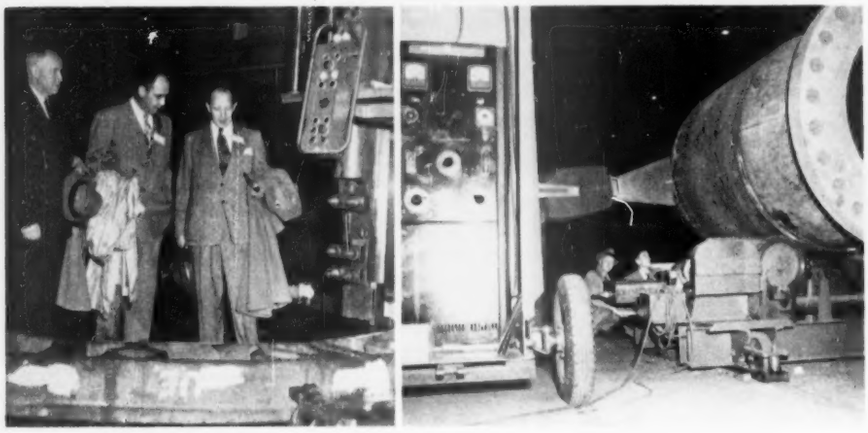
Born in Delhi, Delaware county, N.Y., Mr. Lyall was sheepskinned from Cornell with an m.e. degree in 1930, and went to work for International Paper for five years. He was engaged in mechanical engineering research in Glens Falls, N. Y., when Armstrong Cork beckoned to him. His specialized work with that company heads up engineering research and development concerned with all their papermaking operations —at two board mills and a felt mill, and also their gasket paper and acoustical papermaking plants.

In 1940 he was married and his wife, Eleanor, and 12-year old daughter, Katherine, drove with him to Montreal to be present on the occasion of his being honored by the engineers group.

R. G. QUINN, of the research department, Johns-Manville Corp., has moved up into the chairmanship of the engineering research and machine design committee of the Engineering Division, the post which Mr. Lyall formerly held. Mr. Quinn is known in the industry for having developed a unique type of asbestos paper for Johns-Manville.

GEORGE HRUBECKY, chief of staff engineering for Marathon Corp., Rothschild, Wis., has taken over the chairmanship of the mill maintenance and materials committee of the Tappi Engineering Division, succeeding *H. F. PARKER* of New York & Penn.

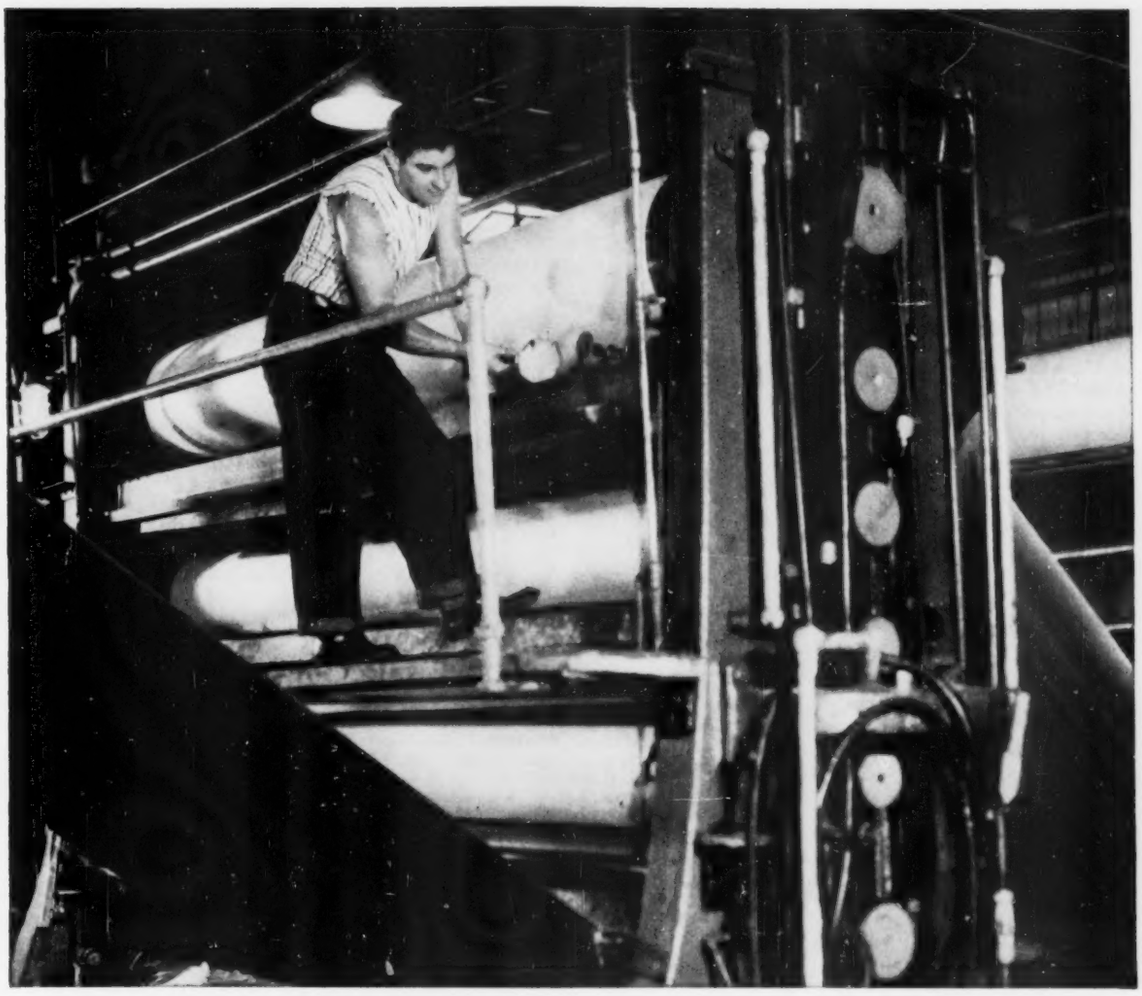
WILLIAM R. McNALLY, Link-Belt's specialist in the pulp and paper field, who headquarters at its 300 West Pershing Road plant in Chicago, has taken over the chairmanship of the materials handling committee, succeeding *A. P. SCHNYDER* of Ebasco. Mr. McNally is a graduate of Duquesne and started in Link-Belt's Indianapolis plant, was sales engineer in Detroit, and then moved to Chicago, specializing in serving this industry since 1949.



DELEGATES VISIT EQUIPMENT PLANT

About 150 delegates to the Engineering Conference stayed over an extra day to tour plants of Dominion Engineering Works, Ltd., and Dominion Bridge Co. Ltd. At left, looking over 52-in. vertical boring mill at Dominion Engineering are (l to r) R. G. MacDONALD, Secy.-Treas. of Tappi; WALTER C. BLOOMQUIST, G-E, General Secy. of Engineers Division; and C. J. SIBLER, W. Va. Chief Engineer and Gen. Chairman of Engineers.

At right, delegates saw this X-Ray machine at Dominion Bridge, in operation on a new intake pipe for Aluminum Co. of Canada's big development at Kitimat, B.C. It will also serve new Kitimat Pulp & Paper Co. mills at same site with A.C. of C. smelter.



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Paracol wax emulsions are helping to solve many sizing problems while often effecting marked economies in size furnish. Paracol 403R6, for example, is especially valuable in surface sizing—calender stack or size press. When used in small quantities with starch, it improves liquid repellency and printability of paperboard.

In size press use, one mill found that as low as 0.25% Paracol 403R6 in its starch mix eliminated feathering on bond papers. Another mill reduced internal size usage from 1.5% -2% to 0.5% on all grades of paper by using Paracol 403R6 with starch.

More than a dozen types of Paracol wax emulsions meet practically every paper and paperboard sizing need. The complete Paracol family is described in this new book. Write Hercules for your copy.

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SIZING MATERIALS AND CHEMICALS FOR PAPER

South Organizes Community Relations Program; West Va. Co. Vetoes Old Seed Handout Systems

ERLING RIIS, vice president and general manager, Southern Kraft Division, International Paper Co., keynoted formation of a Community Relations Service for the pulp and paper industry of the six Southeastern states at a meeting in Atlanta Nov. 4–5, by declaring: "By sharing knowledge we can learn more than any of us can learn separately."

J. Bruce Morford, manager of industrial-community relations for Champion at Canton, N. C., was elected first president of a permanent organization. Kirk Sutlive, public relations director, Union Bag, was elected vice president and James E. Williamson, Champion, secretary-treasurer.

Future programs and "workshops" will be planned by three permanent committees—forestry programs, headed by Justin R. Weddell, public relations chief, St. Regis, Pensacola; employe programs by W. H. Bailey, personnel director, Sonoco Products; and community programs by Ike Y. East, production supervisor, International Paper.

Over 300 members and wives attended.

Gordon Singletary, plant manager, Brunswick Pulp & Paper, presided at a business meeting. Two-year directors elected: M. Singletary; Mr. Morford; Mr. Bailey; K. F. Adams, vice president, Halifax Paper; George L. Clarke, mill manager, Coosa River Newsprint; and James Dalton, secretary-treasurer, Austell Box Board. One-year directors: Mr. East; Mr. Sutlive; Mr. Weddell; C. E. Hartford, vice president, Riegel Carolina; R. E. Phinney, general manager, Container Corp. of America, and H. E. Wehr, division manager, Mead at Harriman, Tenn.

Sydney Ferguson, president of APPA and chairman of Mead, said most industries do not have the "economic-worth-to-the-community potential" of this one, an asset in competition with other industries for community goodwill.

Most effective communication in the mill, he said, was "face to face communication between a man and his immediate boss."

Mr. Riis emphasized the effects of well managed mills and run-down mills on communities. And he said "there is no way a mill gets closer to a community than in buying wood."

Reuben B. Robertson, Jr., president of Champion, said "in view of these critical times, it is important we reexamine our community relations. It is up to us to protect and build our free enterprise system." He urged a 3-point objective—to develop understanding, cooperation and action, in that order.

Edward J. Gavner, III, president of Brunswick, stressed "the golden rule" and the "square deal" as keys to success of good forestry relations with big and little land owners, loggers, woods employes and communities. Forestry relations should be maintained from top management level,

PICTURES BY PULP & PAPER at Atlanta kickoff meeting for Joint Southeastern Community Relations "Workshops"—

Top left group—Men who will direct Southeastern Service, l to r: W. H. BAILEY, Sonoco Products, Chairman of Employe Program Committee; JAMES E. WILLIAMSON, Champion, elected Secretary-Treasurer; KIRK SUTLIVE, Union Bag, Vice President; I. Y. EAST, International Paper, Chairman of Community Program Committee; J. BRUCE MORFORD, Champion, President; and JUSTIN R. WEDDELL, St. Regis, Chairman of Forestry Program Committee. Top right—Atlanta Speakers included, from left: REUBEN B. ROBERTSON, JR., Champion; Mr. SUTLIVE; ERLING RIIS, International Paper; Mr. MORFORD; DONALD M. ROCHESTER, APPA Community Relations Secretary; SYDNEY FERGUSON, The Mead Corp.; and EDWARD J. GAYNER, III, Brunswick Pulp and Paper.

BELOW, at left—DON ROCHESTER of APPA. Middle lower group—Studying company publications are—l to r: WALTER W. HANES, St. Regis, Pensacola; R. E. PHINNEY, Container Corp.; GEORGE R. KOONS, Bowaters Southern Paper; ALFRED CLARKE, St. Regis, Jacksonville. At lower right: ROBERT W. D'AMBRY (left) and ROBERT BENTLEY, Asst. Plant Mgr. at Covington, both of West Virginia P & P, study their company's color slides.

he said, and by personal contacts with wood suppliers, U. S. Forest Service and state foresters.

"The men of ability who have done so well in our mill organization should get out and do the same job in the woods," he said. "We have not done enough in forest public relations. Our men at the top need more understanding of forest problems. The people of the forest need better understanding of the enterprise on which they depend for livelihood."

Mr. Sutlive stressed that good employe relations leads to good community relations—"no amount of advertising and speech-making will offset effects of an employe grousing to neighbors."

Telling communities all the facts about pollution problems, without trying to hide anything, was urged by one operator.

There was general approval of company publications, but disagreement on whether they should be mailed to homes. Also on carrying advertising—one opinion being that merchants must feel it is legitimate expense. One president favored publications only in small communities. Quality was stressed, and in large companies a full time editor was recommended.

In a forestry panel, a unique effort in the South was reported—distribution of free seedlings through its own concentration yards by West Virginia Pulp and Paper Co., Charleston, S. C. This was done because a survey showed in distribution through county agents, dealers, 4-H clubs, etc., the company completely lost its identity as the donor. In many cases, people receiving the seedlings thought they were getting them from the state or the Forest Service.

During the 1953–54 season, 1,500,000 seedlings will be given out in South Carolina and 500,000 in Georgia through a total of eleven yards. The program is directed by Manton R. Frierson, Jr., company conservation forester.

G. A. Hermann Considers New Activities in Industry

George A. Hermann has resigned from the Hermann Mfg. Co., which was sold to Essex Wire Corp. in 1951, and is taking a rest at his home in 722 Neil Ave., Lancaster, O., while considering future activities in the pulp and paper field. Since 1921 he has been active in sales and service of the Hermann Improved Claflin refiner, of which Emerson Mfg. Co. is now sales agent in various regions of the country.

AFPI Elects

Leonard G. Carpenter of Minneapolis, Minn., has been elected president of American Forest Products Industries, Inc. succeeding James Madden, president of Hollingsworth & Whitney Co. Mr. Carpenter is president of McCloud Lumber Co., with lumber operations in McCloud, Calif. New trustees are John H. Hinman, president of International Paper Co., Charles M. Hines, president, Edward Hines Lumber Co., Chicago; and Ernest L. Kurth, president, Angelina County Lumber Co., Keltys, Tex.

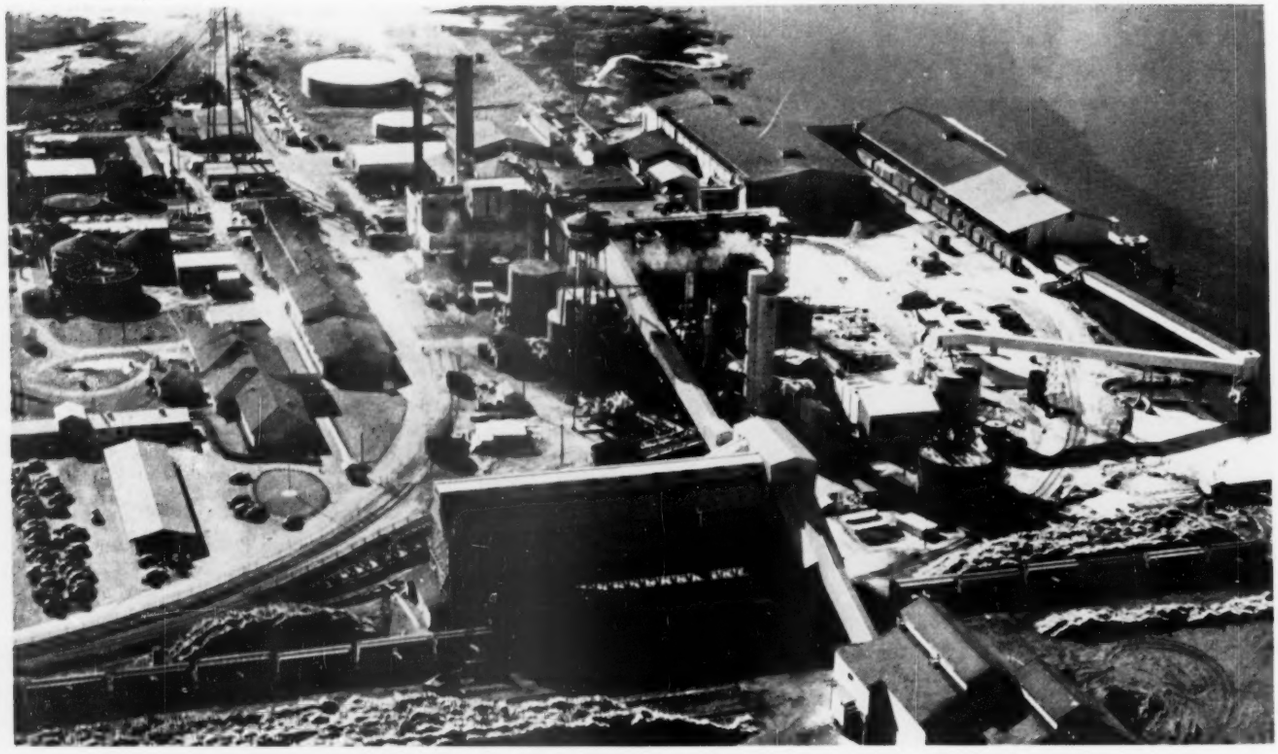
Officers reelected William B. Greeley, chairman; Walter J. Damtoft, Champion Paper, and William Swindells, Portland, Ore., lumberman, vice presidents; P. H. Glatfelter, P. H. Glatfelter Co., treasurer; and Charles A. Gillett, secretary and managing director.

WISCONSIN-MICHIGAN—another in a series of scenes . . . areas where Appleton Wires serve the paper industry.

A SAGA of trees to model T's...that's the romantic story of Wisconsin-Michigan, land of lumberjack lore and birthplace of mass production.

Here is truly an area of vivid contrast, where a vacationist's dreamland of crystal lakes and singing streams stands in the back yard of America's mighty industrial empire. Playing an important role in this drama of productive might are 114 paper mills...most of which know, from long experience, that *Appleton Wires are Good Wires!*

APPLETON WIRE WORKS, INC., APPLETON, WISCONSIN



SULFUR DIOXIDE NUISANCE CURTAILED BY RAYONIER AT FERNANDINA

Air view of Rayonier mill at Fernandina, Fla., where sulfur dioxide recovery system has practically eliminated air nuisance and saved 10 to 12 percent of sulfur consumption. Sulfur dioxide recovery plant is seen at right of water tower in photo; water refrigerating unit is at foot of water tower.

Rayonier Sulfur Dioxide Recovery Ends Fernandina Air Nuisance and Saves Sulfur

By George E. Jackson

Asst. Plant Supt., Rayonier Inc., Fernandina, Fla.

G. E. JACKSON, who wrote this article especially for PULP & PAPER.

FERNANDINA DIVISION, Rayonier Inc. is about one mile from the business district of the seaside resort, Fernandina Beach, Fla. As one of the large industries in the community, Rayonier has endeavored to be a good citizen. A step forward in the public relations program of this sulfite pulp mill was installation of a sulfur dioxide recovery system to eliminate the nuisance of blow gases. Recovery of this sulfur dioxide has reduced sulfur consumption, a timely factor when conservation and efficient use of sulfur is a subject of serious consideration.

The recovery system was correlated with a 25 percent increase in plant capacity. The fifth digester (A. O. Smith Corp.), added as part of this expansion program, was of stainless-steel-lined, all-welded construction. Some additional cooking acid required for this digester is supplied by expanded acid plant facilities, but a substantial portion of the sulfur requirement is contributed by the recovery system.

The design of the recovery system by the Engineering Division of Vulcan Copper & Supply Co., in collaboration with Rayonier, has accomplished this three-fold purpose:

1. Eliminated nuisance in the atmosphere of sulfur dioxide from blow gases;
2. More efficient utilization of sulfur by recovery;
3. A 25 percent increase in cooking acid production with but limited expansion of the acid plant.

A large amount of steam is released during a blow, making heat recovery economically desirable. This phase of the recovery system was included in the design, and is scheduled to be added as a future project.

Process Is Described

A flow diagram of the recovery system is shown (Figure 1).

Just prior to blowing a digester, the operator presses a remote control button that opens the butterfly valve that connects the blowpit to the gas header, then starts the pumps and blower by remote control. As the blow valve is opened, a timer is energized to delay the closing of the vent stack butterfly a sufficient length of time to purge the air from the blowpit and ductwork.

The blow gases enter the contact condenser where the steam is nearly all condensed by 80°F. water flowing counter current to the gas stream. The condensate, which is presently sewered, is controlled at a few degrees below 212°F. by regulating the flow of cooling water to the condenser to minimize the loss of sulfur dioxide by absorption at this stage.

The blow gases leaving the contact condenser enter the surface condenser at 150°F. where they are further cooled before being pulled through the blower. The small amount of condensate from the hot well of the surface condenser is returned to the contact condenser to strip and re-

WHAT IT DOES AND HOW IT DOES IT

The sulfur dioxide recovery system at Rayonier's Fernandina, Fla., division (unique sulfite pulp mill using Southern wood) has practically eliminated the nuisance of sulfur dioxide in exhaust gases and reduced sulfur consumption by 10 to 12 percent.

These are the five stages of the process:

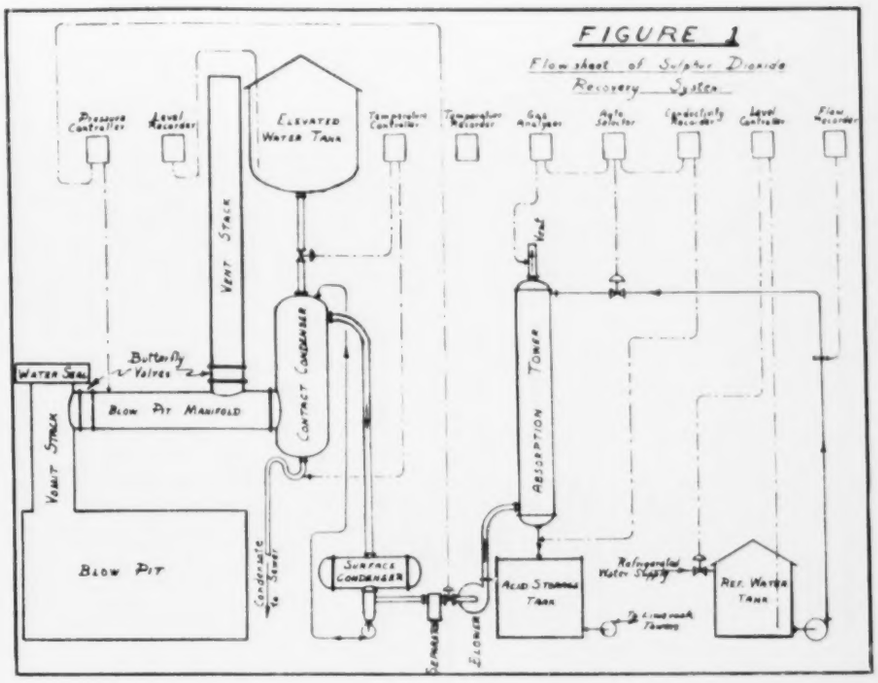
1. The stream in the digester blow gases is condensed in a counter-current contact condenser.

2. Gases leaving contact condenser are cooled in a tubular surface condenser.

3. Cooled gases are compressed by a high-speed rotary blower.

4. Sulfur dioxide is absorbed by refrigerated water in a counter-current absorption tower.

5. Sulfurous acid made during the blow is collected in a storage tank to be used at uniform rate in acid plant.



cycle the absorbed sulfur dioxide. Cooling water for the surface condenser flows continuously and is used in the pulp mill.

The rate of flow of the cooled gases is controlled by a butterfly valve on the suction side of the blower so as to maintain uniform conditions throughout the system.

The compressed gases enter the bottom of the absorption tower and flow upward counter current to the refrigerated water. The flow of refrigerated water to the absorption tower is regulated to minimize the loss of sulfur dioxide to the atmosphere and to control the strength of the acid produced.

The recovery acid from the absorption tower is collected in a storage tank during the blow for continuous use in the strong rock tower of the Jenssen type acid plant.

The recovery system is shut down after the digester has blown either by the operator or an electrical timer if he should fail to do so after sufficient interval has elapsed for completion of the blow.

EQUIPMENT IS DESCRIBED

Digesters and Blowpits

There are five 19 ft. diameter by 42 ft. high digesters, each of which has its own blowpit 45 ft. by 22 ft. high. Four are of standard construction, double laid brick lining in a mild steel riveted shell. The fifth digester is of all-welded construction, lined with stainless steel and insulated on the outside.

Blowpits are wooden with stainless steel drainer plates. Large 11 ft. by 78 ft. high wood stave vomit stacks were formerly used to vent blowpits. These stacks have been cut down to within a few feet of the junction with 6 ft. diameter type 317 stainless steel ducts and capped off with a water seal to protect blowpits from excessive vacuum or pressure. These seals were built in such a way as to avoid losing the water on slight overpressures thus minimizing the loss of blow gases by resealing again under normal conditions.

The seals are drained by the blowpit operators to provide natural ventilation in the blowpit through stub vomit stacks after the recovery system has shut down on each blow.

A vent stack is provided for blow gases when the recovery system is not in operation. This stack is of the same material and diameter as the manifold system on the blowpits. It is 50 ft. high, so when the recovery system is not in use blow gases are vented at sufficient elevation to clear the operating floor of the digester building.

Contact Condenser

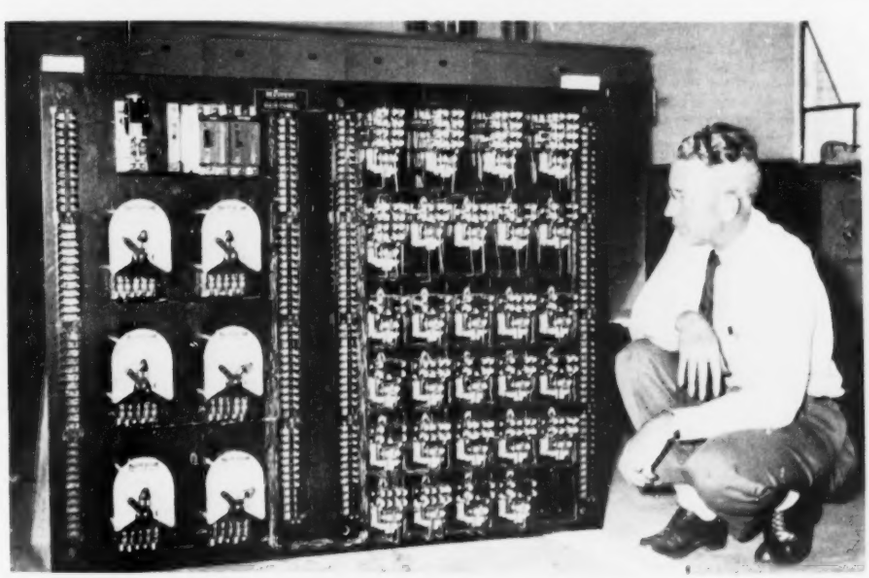
Gases from blowpits are manifolded to feed to the direct contact condenser. The steam in hot gases is condensed here by counter-current contact with 80°F. water. Design of the contact condenser was for full heat and sulfur dioxide recovery. Only the latter feature is now utilized.

The condenser is of all welded, type 316 stainless steel to resist the corrosive nature of blow gases. The hot gases enter the bottom of the condenser and rise up through ring and disc baffles in the opposite direction to cooling water. The condensate is discharged by gravity through a U-trap to sewer.

The condenser is mounted high enough to locate a storage tank beneath it to collect condensate at some future date for heat recovery. Then condensate will be continuously cooled and pumped to an elevated tank to be recirculated through contact condenser again on the the subsequent blow. At present, condensate is sewered and water make-up is supplied continuously from the pulp mill.

An elevated storage tank is used to accumulate sufficient cooling water to use during the blow rather than having a high volume water pump which would cause large fluctuations in mill water and power supplies.

Amount of cooling water used is controlled by a butterfly valve actuated by an instrument measuring the temperature of condensate. This temperature is controlled at a point just below 212°F. to minimize sulfur dioxide lost by dissolving in condensate going to the sewer. Blow gases are cooled to 150°F. in the contact condenser.



MAKES SYSTEM SAFE

MASTER CONTROL PANEL for recovery system is inspected by S. L. TARLTON, Rayonier's Chief Electrician. Elaborate electrical system way designed by Vulcan Copper and Supply Co., in conjunction with Rayonier, to ensure maximum safety in blowing digesters.

Surface Condenser

The heat content of gases leaving the contact condenser is too high for efficient production of acid in the absorption tower. A tubular heat exchanger fabricated of type 316 stainless is used to further cool gases.

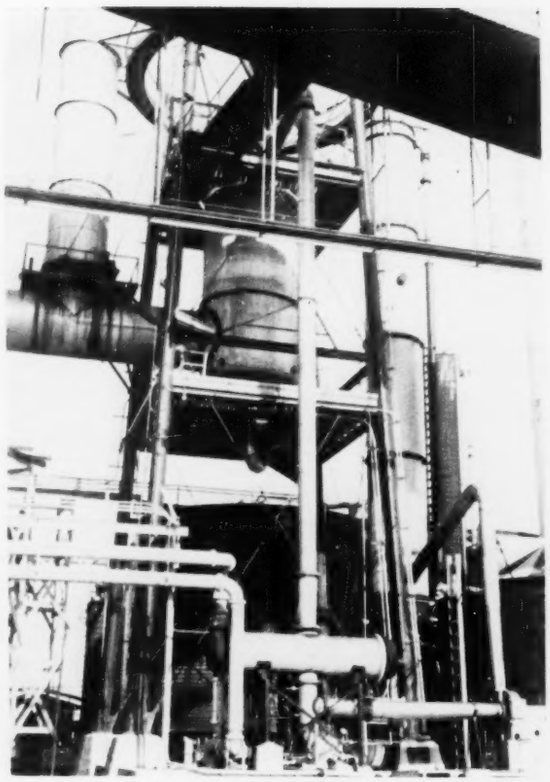
Cooling water is circulated continuously through this condenser to the pulp mill to avoid intermittent demands of water that would upset the mill supply system. No effort is made to utilize heat pick-up in this water at present.

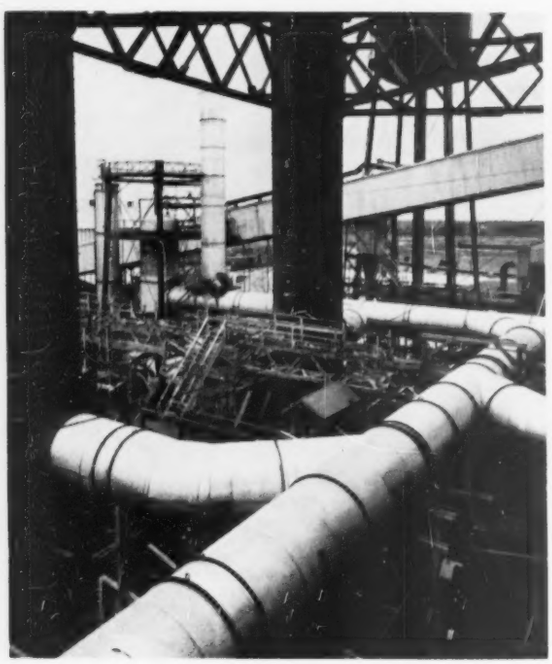
A drip well is mounted below the surface condenser to collect condensate removed at this point. The temperature of this condensate is low enough to absorb an appreciable quantity of sulfur dioxide, and for this reason is pumped to the contact condenser where gas is stripped and recirculated back through the surface condenser during the blow.

A small gravity drain is connected to the drip well in case the condensate pump fails. As further protection an entrainment separator is located in the gas duct between the drip well on the surface condenser and blower to protect the latter from any liquid carry-over.

THESE ARE STEPS IN RECOVERY SYSTEM

VULCAN RECOVERY SYSTEM at Fernandina showing vent stack, contact condenser, surface condenser, blower, absorption tower and storage tanks. Digester blow gases enter contact condenser from left where steam is condensed. Gases are cooled there and in surface condenser before reaching absorption tower.





STAINLESS STEEL DOES A JOB

OVERALL VIEW of extensive stainless steel ductwork for recovery system at Fernandina Mill. The 72-in. diameter ducts were fabricated of 14 gauge, type 317 stainless by W. L. Rives Co., Jacksonville, Fla. This photo taken from digester room. Vent stack, condensers and absorption tower at left background.

Blower

Buffalo Forge Co. designed and built a blower to Vulcan Copper & Supply Co. specifications to handle blow gases through the recovery system. It is capable of handling 7700 cfm at 70 in. of water pressure and 130 F. This blower is a single suction closed impeller type, with a 29½ in. diameter wheel turning at 3500 rpm. A 125 hp, 2200 volt electric motor is direct coupled to blower shaft.

The blower is located between surface condenser and absorption tower, with a butterfly control valve on the suction side. This valve is used to regulate flow of gases during blow to avoid developing excessive pressure or vacuum in blowpits. It is also used to limit the starting load on the blower motor by remaining closed until the blower is at full speed.

The blower may be started or stopped from two locations: the digester operating floor or at blower motor. The latter is provided with a momentary contact switch with provision for locking the switch off as a convenience for maintenance when checking or repairing the blower.

Absorption Tower

Compressed gases from the blower enter the tower at the base and rise counter current to refrigerated water to the top where inert gases are discharged to atmosphere. Refrigerated water is pumped from a storage tank to tower top and flows downward by gravity absorbing sulfur dioxide to form sulfurous acid which is collected in a separate storage tank at the foot of the absorption tower.

This is a ring and disc type tower, 6 ft. in diameter by 65 ft. high of type 316 stainless steel welded construction. It is mounted adjacent to the contact condenser to provide wind bracing, this area being subject to high winds with velocities of 80 mph.

Flow of water to the tower is initiated when the operator starts the blower and refrigerated water pump. Rate of flow is controlled by instruments which measure the strength of acid leaving the bottom of the tower and the sulfur dioxide vented from the top. It is adjusted to provide as strong an acid as possible while maintaining the loss of sulfur dioxide to the atmosphere at a minimum.

Acid made from each digester blown is collected in a wood stave storage tank of 25,000 gals. capacity. It is then pumped continuously to the top of the strong rock tower of the Jenssen type acid plant.

Electrical System

An elaborate electrical system was designed by Vulcan Copper & Supply Co., in conjunction with Rayonier, to ensure safety of operators when blowing a digester.

Individual panel boards are mounted opposite each digester on the digester operating floor. These panels are identical except for one feature: The isolating valve of a particular blowpit can only be opened from the panel opposite the digester to which this blowpit is connected. Red and green lights on each board indicate whether isolating valves are fully opened or closed. In addition, warning lights over the blow valve of each digester indicate when blowpit isolating valves are in correct position. A second light over the blow valve indicates when the recovery system is operating. Individual red and green lights on each digester panel board indicate whether each motor is running or not.

A separate signal system for warning blowpit operators is mounted in each blowpit hosing house. One light indicates when the recovery system motors are started. This light flashes on in all five houses. In the hosing house on the blowpit that the digester is to blow into, a second light flashes on and a horn gives an audible signal as the blow valve is opened.

Electrical interval timers program the operation of intermittently operated motors and vent stack valve. All motors are electrically interlocked to shut down the recovery system should any fail to operate. A separate panel board is mounted on the digester operating floor to indicate the source of trouble in such event so the operator may correct the difficulty before the whole blow is vented.

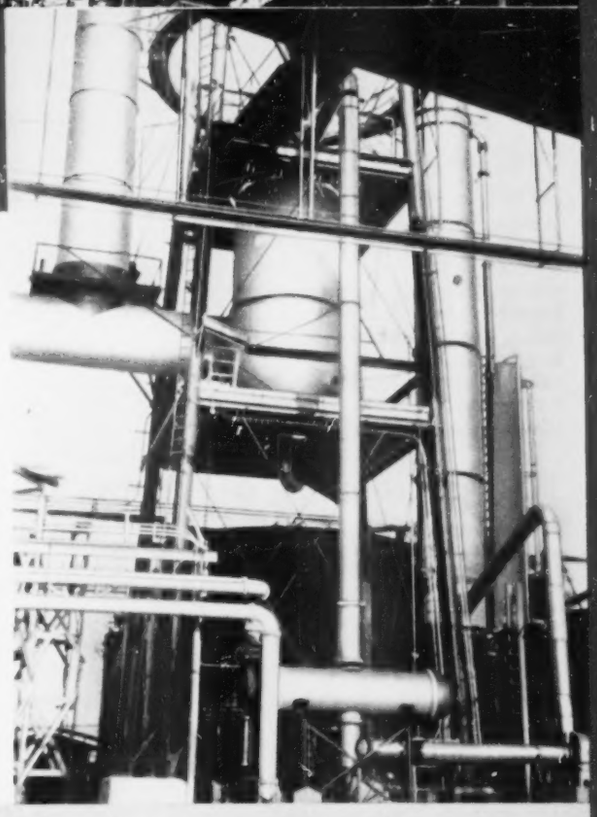
Instrumentation

An automatic recovery system that would operate efficiently with a minimum of surveillance was the primary objective in designing instrumentation. High sensitivity and quick response are essential to control temperature and pressure of blow gases because of the narrow limitations imposed by the blowpit protective devices which function on ±4 inches pressure during the blow. Principal instruments used are:

1. A recording pressure controller operates the butterfly valve on the suction side of the blower to control pressure in blowpits. High and low contacts in the controller will open the vent stack butterfly valve should pressure move outside established limits. Water seals on blowpits are a further precaution in event pressure controller fails to function correctly.

2. A recording temperature controller regulates amount of cooling water used in contact condenser. A sensitive thermocouple located at the contact condenser transmits changes in tem-

VULCAN LICKS AN OLD PROBLEM — *WITH A* BY-PRODUCT ADVANTAGE!



Vulcan Engineering recently completed this sulfur recovery unit for Rayonier's huge plant at Fernandina Beach, Florida. The result — two immediate, practical, dollar-saving advantages:

First: prompt removal of atmospheric contamination;
Second: recovered sulfur dioxide for re-use in the acid making system.

Thus, with this Vulcan-engineered unit Rayonier simultaneously resolves the problem of digester blow vapors *and* realizes substantial savings in sulfur consumption. In addition, the recovered sulfur permits increased plant capacity without the necessity of enlarging the acid making system.

Engineers and cost-conscious mill executives will be interested in the efficient control instrumentation designed by Vulcan engineers to simplify the extreme complexities in following rapidly varying process conditions. A special point of interest, too, is that facilities are built into this unit for the subsequent addition of heat recovery equipment whenever desired.

If your mill is considering an attack on its digester blow problem, don't overlook the numerous special advantages which a Vulcan-designed sulfur recovery unit can effect for you. As at Fernandina Beach, Vulcan can provide your mill with a complete unit, *designed to fit your particular operating conditions.*

VULCAN ENGINEERING DIVISION

The VULCAN COPPER & SUPPLY CO., *General Offices and Plant,* CINCINNATI 2, OHIO

NEW YORK BOSTON HOUSTON SAN FRANCISCO
VICKERS VULCAN PROCESS ENGINEERING CO., LTD., MONTREAL, CANADA

DIVISIONS OF THE VULCAN COPPER & SUPPLY CO.:
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perature to an electronic controller, which in turn adjusts the position of an air-operated valve in the cooling water supply line to the condenser. An air booster and valve positioner are used to speed valve action.

3. A low water level switch in the liquid level recorder of the elevated water storage tank is connected to the recovery system to shut it down when the supply of cooling water for contact condenser is too low. Another switch operates the water pump that fills the elevated tank, shutting the pump motor off when the tank is full, and starting it up again when water level falls.

4. A multipoint temperature recorder measures temperatures of condensate and gases at several points in the recovery system. An electronic recorder was used to ensure reading six thermocouples in rotation with as little time as possible between each measurement.

5. A conductivity recorder measures the strength of acid leaving the absorption tower and transmits this to an auto-selector controller to regulate the flow of refrigerated water to absorption tower.

6. A gas analyzer measures the strength of sulfur dioxide in absorption tower vent by infrared light absorption and transmits this to an auto-selector controller. A continuous record is kept of the amount of sulfur dioxide in vent gases.

7. The auto-selector controller regulates flow of refrigerated water to absorption tower to maintain the loss of sulfur dioxide to atmosphere at a minimum while holding strength of acid made at highest possible concentration.

8. A flow recorder measures and totalizes refrigerated water used in the tower. This gives a record of amount of acid made.

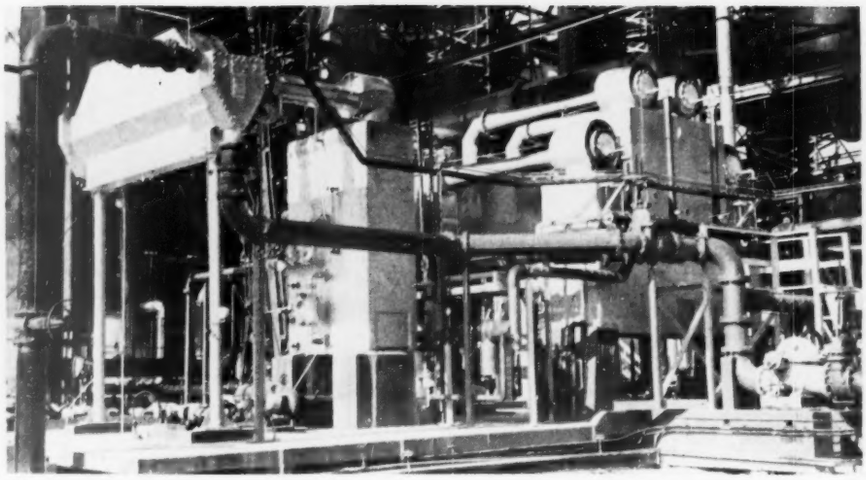
9. A level recorder and controller on refrigerated water storage tank ensures having sufficient water on hand despite variations in usage in absorption tower.

SUMMARY

The recovery system was designed from operational data accumulated when four digesters were in use. Addition of the fifth digester was followed by changes in operating procedures in cooking which lowered sulfur dioxide content of blow gases. This meant the system was not able to produce the quantity of acid the original design indicated. Results to date give a recovery of 1,000 lbs. of sulfur per blow, which amounts to about eight tons of sulfur per day, produced as 1.5-2.0 percent sulfurous acid.

Some difficulty was experienced during start-up of the system due to relatively poor control of water flow to contact condenser. An extremely sensitive thermocouple was required to follow swings in temperature, as flows of water and gas varied, in order to maintain blowpit pressure within allowable limits. This was especially true at the start of the blow when the greatest change occurred as the blowpit gases displaced air in the blowpit and recovery system. It was found necessary to retard the rate of opening the blow valve to avoid breaking the water seal on the vent stack during start of blow until conditions in the contact condenser had stabilized.

Loss of sulfur dioxide from the absorption tower vent is kept below 3 percent and averages about 1.5 percent sulfur dioxide, which is low enough to avoid detection beyond the mill site.



WATER REFRIGERATED HERE

REFRIGERATING SYSTEM consists of two Ingersoll-Rand steam jet water vapor units which also supply refrigerated water for limerock towers at acid plant.

Pulp Market Abroad Improves; Price News

Outlook for market pulps overseas has improved somewhat, and Canadian producers selling to the United Kingdom were buoyed by reports that British industrial production in September was at the highest level ever recorded.

Scandinavian pulp producers increased prices in the U.S. for the fourth quarter.

Bleached pulps continue to head the export parade in Canada, with bleached sulfite export being 450,000 tons for the first nine months.

Celebrate 40 Years of Pulp and Paper Courses at Maine

OVER 100 MEN from 36 companies took part in U. of Maine Pulp & Paper Foundation's Open House with SECRETARY OF INTERIOR McKAY and PRES. L. F. WHITTEMORE of Brown Co. as featured speakers. Top row l to r: Nine company presidents in attendance—E. C. BOWEN, Bowen Corp.; HAROLD HOLDEN, Eastern Corp.; GEORGE E. DYKE, Robert Gair Co.; GEORGE OLMSTED, JR., S. D. Warren Co.; HUGH J. CHISHOLM, Oxford Paper Co.; EUGENE H. CLAPP, Penobscot Chemical Fibre Co.; ENRIGHT A. ELLIS, Downingtown Mfg. Co.; S. M. RUST, JR., Rust Engineering; and DWIGHT S. BRIGHAM, Keyes Fibre. Lower row l to r: DWIGHT B. DEMERITT, Vice Pres., Dead River Co.; LOUIS J. FREEDMAN, Vice Pres., Penobscot Chemical Fibre, and J. L. OBER, Vice Pres., Scott Paper, who received honorary degrees as did Mr. Chisholm (above); HENRY W. FALES, Vice Pres. and Mgr., St. Croix Paper, and JAMES A. GANNETT, retired U. of Maine Registrar, new Secretaries for Foundation; MR. WHITTEMORE (mentioned above), and ARTHUR A. HAUCK, Pres., U. of Maine.

FORMATION

THAT'S OUR JOB

Few of us here at Valley can remember when we haven't lived and slept the daily problems of designing and building Inlets and Headboxes. Our specialization goes back that far.

And we have followed them into the field, observing and refining every detail of performance . . . . . all resulting in a continuously enlarging reservoir of information to assist our mill customers in the making of *better* paper at *lower* cost.

Experience is a great teacher, and we have taken fullest advantage of this practical source of knowledge to serve you.

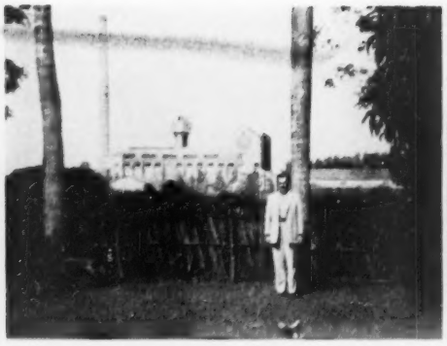
Better formation is *your* objective.

Better formation is *our* job.

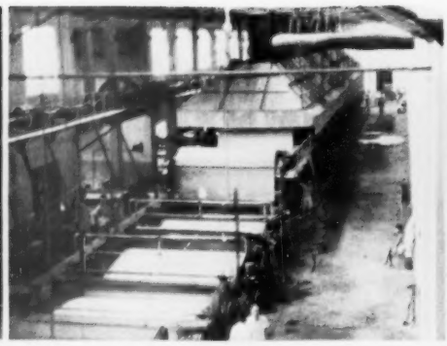
We invite you to submit your formation problems to us for consultation.

Stock Entrance Equipment by

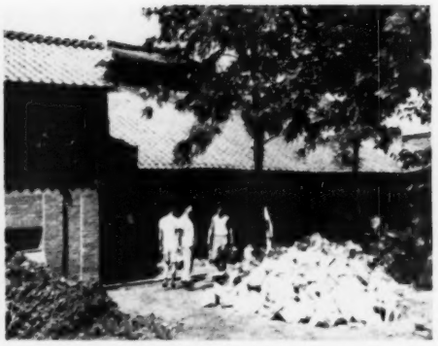
VALLEY
Iron Works Company
APPLETON, WISCONSIN



WORLD'S LARGEST BAGASSE MILL with KARL A. CLAUSON in foreground. Here Taiwan Pulp & Paper Co. makes 25,000 tons annually of bleached pulp by Pomilio process.

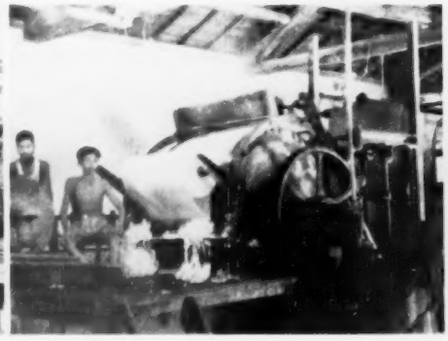


MAKING BAMGOO AND BAGASSE PAPERS on one of Taiwan Pulp & Paper Co.'s machines. Biggest paper company in that country, it has wide range of products.

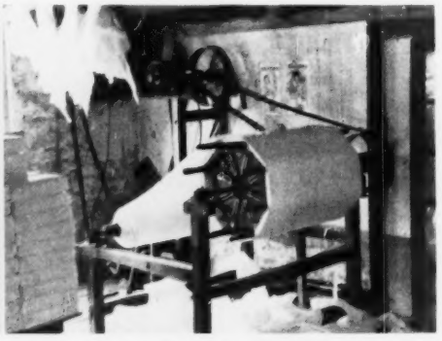


LIMESTONE FOR TAIWAN MILL is piled outside building (light pile at right). Other necessary raw material for the mill, coal, is the dark pile in left foreground.

ROTARY DIGESTER IN TAIWAN is under roof but not entirely housed; cooks rags, hemp and straw.



1,000 LBS. TISSUE DAILY are made by this paper machine in big tissue producing mill in Taiwan.



HERE'S THE WINDER FOR TISSUE. In 1,000 lbs. per day tissue mill, winder is kept busy too.

Karl Clauson Girdles Globe in 55 Days; His Company Announces Brazil Mill Plans

KARL A. CLAUSON, vice president of Parsons & Whittemore Inc., 250 Park Ave., New York, returned recently from a zig-zagging world-circling tour of 36,000 miles in the interests of his company's "Private Point Four" program to provide engineering, equipment and management for new mills in foreign lands.

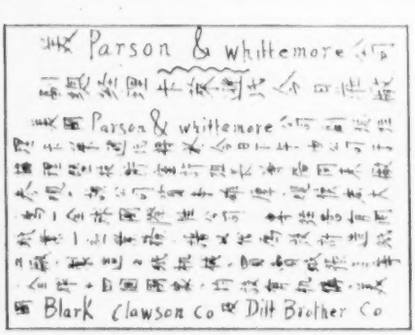
Within a few days after his return, his company announced plans for a new 15,000 tons-per-year $6,000,000 bleached pulp mill near Sao Paulo, Brazil, which will be the first mill in that country to use plentiful stands of the eucalyptus tree for raw material. Pine is the only wood heretofor used in Brazil for pulp.

The Black-Clawson Co., with its Shartle-Dilts divisions, will equip the mill, along with Millspaugh's of England, under their agreement to participate in the "Private Point Four" program of Parsons & Whittemore. Equipment will be of total value of $4,000,000.

The mill is being built for Compania Paulista de Cellulosa Copas, which has other Brazil operations, and the eucalypt pulp used for writing and printing papers.

While Mr. Clauson did not go to Brazil on his world trip, he visited 15 other countries in 55 days. He flew from the west coast of U.S. to Hawaii, then went on to Japan, Taiwan, the Philippines, Australia, Malaya, India, Pakistan, the Near East, Cyprus, Rome, Paris and London and some way points. Pictures with this story are some of many pictures taken by him.

He had no immediate plans for other mills to announce, but he indicated that he and his associates are convinced there are many opportunities for broadening the uses of fibers and paper consumption. Their view is that, generally speaking, new mills will not reduce the exports of American and Canadian firms, but will widen the uses of paper and increase its consumption. Primary paper mills and increased output of principal grades, in their view, stimulate the demand for more and more grades and specialties.

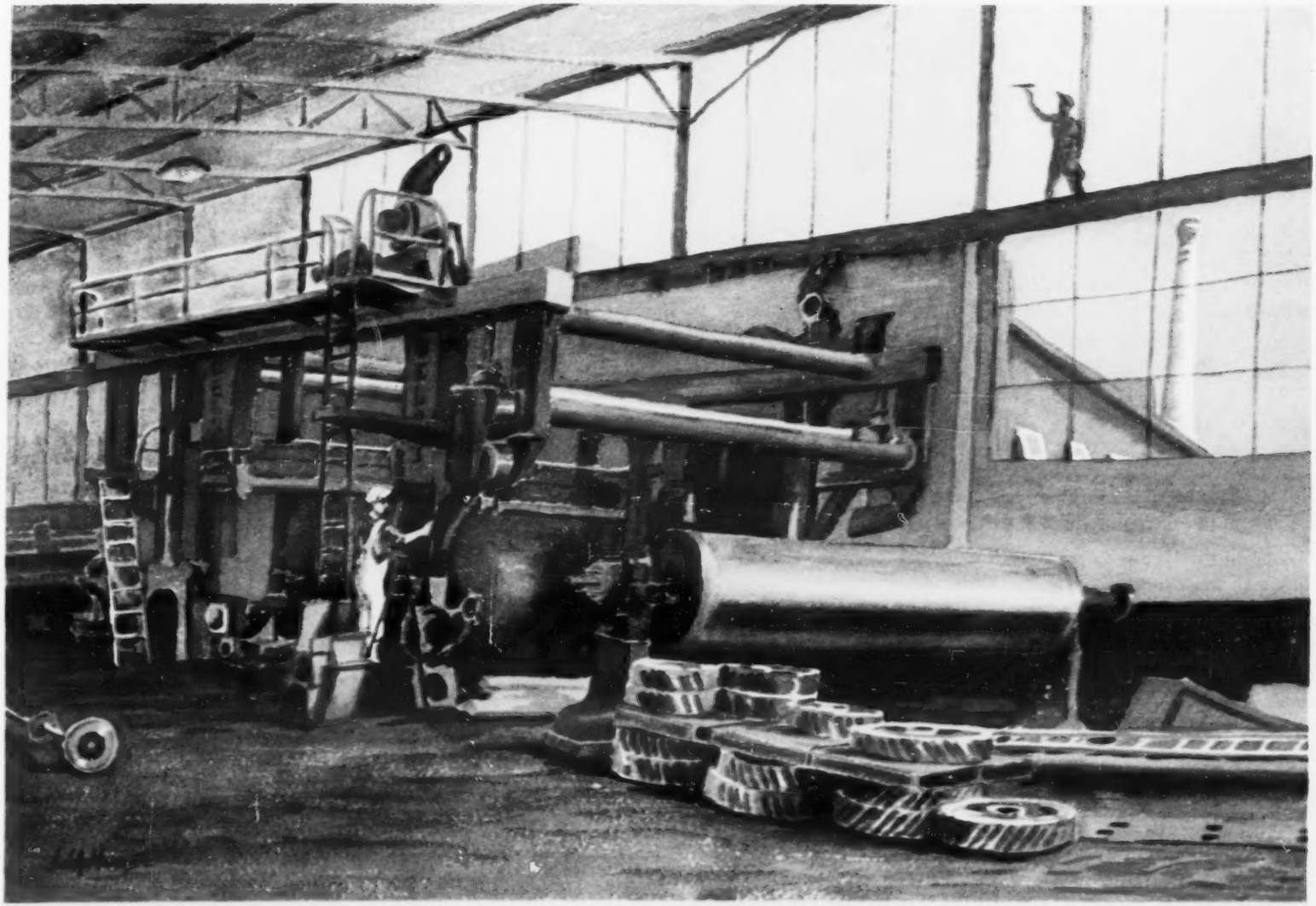


Reports Karl Clauson's Visit

TAIWAN (Formosa) newspaper thus told story of Karl A. Clauson's visit to that country in interests of Parsons & Whittemore's "Private Point Four" program. His name appears in Chinese characters, but editor didn't try translating his company name, nor names of Black-Clawson Co., builders of mill equipment under the plan. Its two divisions, Dilts (Machine Works) and (Shartle) Brothers Co. have been neatly "merged," leaving out the name portions in parentheses.

TISSUE FINISHING ROOM. After cooking, pulp is bleached. Here young girls work in finishing room. Hiding man's head is broke pile going back to machine.

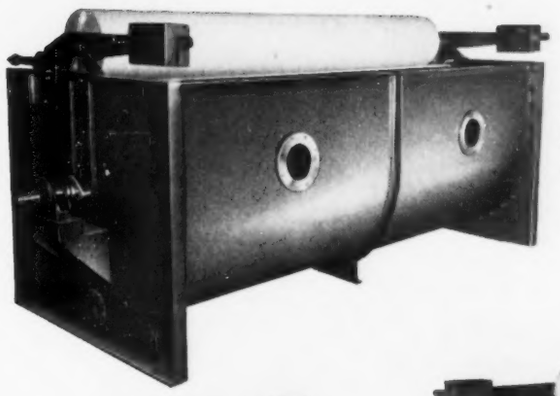
500-YEAR OLD PULPWOOD. These eucalyptus slabs are from 500 yr. old tree used by Australian Newsprint Mills, near Hobart, Tasmania, for newsprint groundwood. Trees are 6 to 8 ft. in diameter. Mr. Clauson saw startup of this company's second paper machine.



WATER COLOR PAINTING BY L. J. A. MEESE

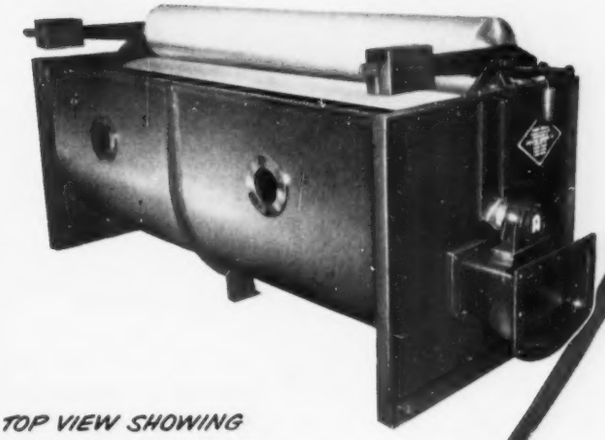
SPACIOUS ERECTION FLOOR at Beloit Iron Works is part of the expansion program which has speeded delivery of paper machinery. The high craneway, with three traveling cranes, simplifies assembly and shipment of heavy equipment for leading paper producers. Shown above is a Beloit Vacuum Transfer type press section custom designed for an ultra-modern newsprint mill.

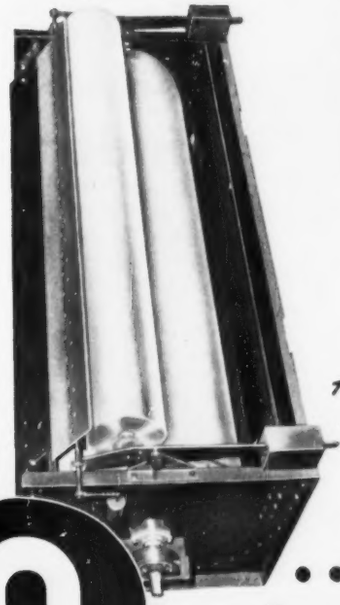
ANY WAY YOU LOOK AT IT...



VIEW OF END AND INTAKE SIDE OF COWAN DECKER

VIEW OF EFFLUENT DISCHARGE END FROM INTAKE SIDE





TOP VIEW SHOWING RUBBER-COVERED COUCH ROLL AND 48" DIA.– 131" CYLINDER MOULD

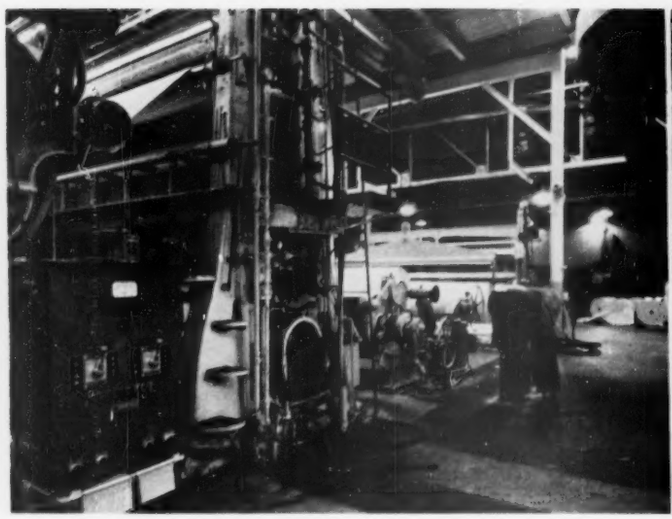
A ...the Cowan Decker shows its superiority!

COWAN DECKER PRODUCTION FIGURES:

35 tons/day — Groundwood
85 tons/day — Sulphite
100 tons/day — Kraft

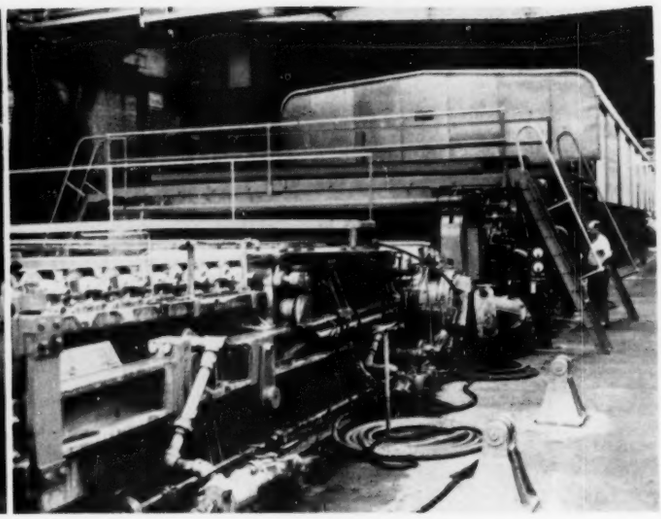
APPLETON MACHINE COMPANY
APPLETON, WISCONSIN

Exclusive U.S. licensee for Cowan Deckers



AT THE FALLS, NO. 3 ROLLS AGAIN!

PULP & PAPER's own picture shows new RELIANCE ELECTRIC & ENGINEERING controls (operator at one) for M & O's 184 in. No. 3 Machine which has new Reliance multiple generator drive with mechanical differential section interlock regulator controlling electronic panel which keeps each section in synchronism. BELOIT reconditioned the stock. CAMERON winder in background.



AT FORT FRANCES—SO DOES NO. 5!

ANOTHER SPECIAL *PULP & PAPER* view of this 188 in. Fourdrinier now stepped up to 1,200 fpm showing its new DOMINION ENGINEERING Fourdrinier and suction press and the ROSS ENGINEERING aluminum hood over dryers. This machine is now on newsprint—it formerly made mostly groundwood papers. Its twin-size No. 6 mate, rebuilt in 1949, now makes mostly groundwood papers.

M & O "Guinea Pigs" New Equipment—Likes It—Starts Up One of Largest Modern Grinder Rooms

AN EIGHT-YEAR LONG PROGRAM of modernizing the three mills of Minnesota & Ontario Paper Co.—International Falls, Minn. (built in 1910), Fort Frances (built in 1941), and Kenora, Ont. (built in 1924)—has come close to a probable investment to date of $40,000,000 but has been paying increasing dividends right along. Higher quality and diversified products, from Insulite and newsprint to kraft and book grade papers, are reaching wider markets.

Early in the program at "the Falls" were a modern bleach plant, the doubled and modernized kraft mill, the new Insulite machine. Along the way, a fine new research center, a water treating and filtration plant, both in the Falls, were "musts." And now the program is climaxed by construction of an entirely new 276 by 92 ft. groundwood mill at Fort Frances, housing 13 superhydraulic magazine grinders, and a general speed-up and improvement program on several of the company's eight paper machines.

Recently when PULP & PAPER visited the M & O operations, the three towns bore little resemblance to the rough communities they were a few years ago. For one thing good roads, trains, buses and planes each year pour thousands of tourists through the communities—350 highway miles from Minneapolis and 165 from Duluth to the International Bridge and 140 miles farther north to Kenora, to fish or hunt.

Mando owns the bridge connecting the Falls and Fort Frances as well as the dam across the river and pumps pulp both ways through a pipe bridge across it. It also owns the Falls daily newspaper and the railroad system which handles incoming pulpwood and supplies, outgoing product shipments and switching for the plants.

MAP SHOWS

ESTABLISHMENTS of Minnesota & Ontario Paper Co., and Ontario & Minnesota Pulp & Paper Ltd. Outlined is state of Minnesota. Minneapolis headquarters is 350 miles from International Falls mill and Fort Frances mill which are just across International Bridge from each other, and connected by pulp pipelines carried by the bridge. From Fort Frances to Kenora, Ont., mill is 140 miles.

"Kingdom" of Ed Backus is no more

The present management of Mando has little similarity to the hard-fisted, hard-driving "one man kingdom" founded by E. W. Backus. He survived the panic of 1893 and the depressions of later years with honeyed words or bluffing front while his creditors waited and his lumberjacks worked for only food, shelter and tobacco, as was not uncommon a generation ago. "E. W.'s" engaging personality couldn't save him in the 1931 depression, however, and the company went into receivership which was to last ten years. Mr. Backus died in a New York hotel in 1934 at the age of 74.

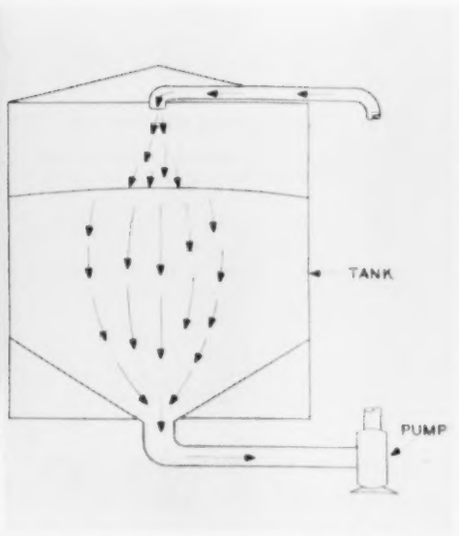
It would be frankly admitted today by both Mando management and labor that the Backus era also left a legacy of scars in human relations which Mando management and intelligent labor leadership at the Falls and the Canadian mills have performed wonders in healing. It has been as big a job as physically modernizing the mills.

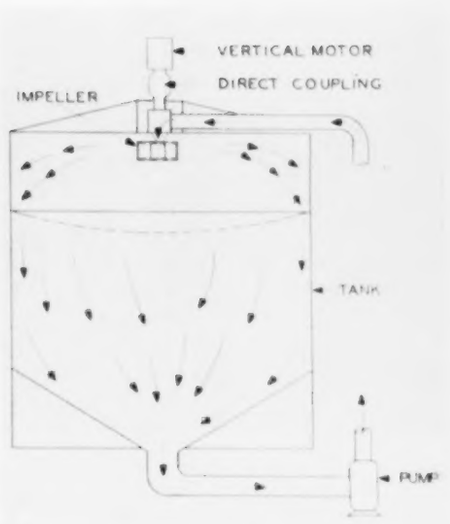
The administrations of the late Donald D. Davis, who came to Mando from the War Production Board and the General Mills presidency, and J. B. Faegre, who succeeded him in 1950 after ably serving the company many years as general counsel and director, took long strides in improving employe and community relations as well as the physical plant. The job is a continuing one.

Before them, the late R. H. M. Robinson, who had served as receiver and as trustee, was president as a result of the reorganization in 1941, and was key figure in the financial recovery which had to precede the improvement program Mr. Davis and Mr. Faegre directed.

Draws Wood from Vast Forests

A well-managed timber backing today is essential for a company looking to a stable future. There is hardly any doubt that Mando is one of the solid companies in pulp and paper in this respect, with the strongest wood backing of any Lake States





Something New at International Falls—Keeps Stock From Hanging or Sticking to Chests

HERE'S A PICTURE OF IT

ALLIS-CHALMERS MFG. CO. made its first installation at the Falls of its now successful "Side-Flo" agitating units. First applied to kraft pulp storage tanks, given new stainless steel tops. Extending above tank is Allis-Chalmers motor and direct coupling to the unseen impeller which throws stock against chest wall, preventing "dead pocketing" around walls.

HERE'S A DRAWING—WITHOUT IT

THIS SHOWS CONVENTIONAL pulp stock flowing in a tank without benefit of the new "Side-Flo" unit. It raised problem of how to keep stock from sticking or hanging to the sides of the stock chest. Where both entering suction and discharge are located in middle of tank, stock has tendency to stick to the walls causing dead pockets. When it dries and loosens, it may contaminate product.

HERE'S A DRAWING—WITH IT

THIS SHOWS HOW STOCK flow works with new ALLIS-CHALMERS "Side-Flo" Unit. The impeller, unseen in the photograph at left, is shown here, and what it accomplishes is indicated by arrows. It requires no change in location of charge or discharge pipe. It is simply mounted in the entering suction with motor and coupling outside. Stock is thrown to walls, the impact preventing sticking.

or Midwest companies. This is saying a lot, because several other Lake States companies have extensive holdings or cutting rights.

In the United States, Mando draws from some 7,000,000 acres, on which it contributes management advice and assistance to many small owners, and owns more than 265,000 acres itself. Across the line in Canada it controls, through Crown concessions, four vast timber limits over an expanse of 5,000 sq. mi. of timber and water. Just east of the mill at the Falls is a sign which says here is "the biggest timber storage yard in the world." It is estimated that 200,000 cords can be piled in the log stacks, each separated and fire protected.

Mando mills are in the heart of one of the great drainage basins of North America. They lie north of that East to West Continental Divide which passes through Virginia, Minn., and includes the great Iron Range. Being north of the East-West Divide, drainage is northward from the great expanse of Rainy Lake into Lake of the Woods, then to Winnipeg River, Lake Winnipeg, the Nelson River into Hudson's Bay and the Arctic Ocean. Always a geographic marvel to travelers in this area is that only a few miles from this drainage across the Divide they see the headwaters of the Mississippi which flows south to the Gulf and other streams that flow into Lake Superior and eastward to the Atlantic.

This year, first time for pulpwood, new roads have opened up the Manitou area. The drive is southward 60 miles to Fort Frances. Many years ago the Manitou was logged for lumber and its new logging era is a striking demonstration of the renewability of pulpwood resources. Another long tow and drive of pulpwood is from up to 110 miles east of the Falls, down the Seine River and through island-studded Rainy Lake. Northward in Kenora are other vast areas, numerous waterways for drives.

Spruce, balsam, jack pine and poplar are species used for Mando products. They bring employment to 1,900 in the Falls mill, to 700 at Fort Frances, to 550 in Kenora, and to an office staff of 200 in Minneapolis and about 600 in woods, besides many hundreds more indirectly engaged. Much has been said of the hard winters in this country, but these employes live in one of America's famous sportsmen's playgrounds. In the fall, the moose, deer, ducks and other game attract hunters from thousands of miles. In the summer and spring the myriad lakes attract fishermen far and wide.

Many improvements in these mills already have been reported in detail in illustrated articles in PULP & PAPER. Much recent work has been on paper machines. So it would be in order to point out the sizes and locations of the machines and the work done.

Improvements at the Falls

At International Falls:

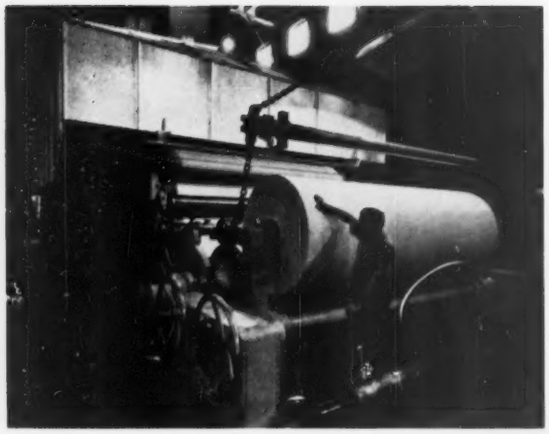
No. 1. The original No. 1 paper machine was removed and scrapped several years ago. This location is now occupied by a company-designed Beloit-built coating machine with a Kohler flying paster unwind stand permitting continuous operation by transferring reels on the fly.

No. 2 Fourdriner machine being rebuilt along lines of No. 3 to be described. A new Reliance electronic sectional drive is on hand to replace the only remaining Corliss steam engine and rope and belt drive which dates back to 1910 when the mill was built. Partial modernization, including a suction second press and a new center-wind reel has been completed. No. 2 is 154 in. wide on groundwood and sulfite papers and the rebuilt job will have a speed range of 200 to 1,200 fpm.

No. 3. A new headbox and inlet for this 184 in. wide machine substantially completes its $1,000,000 modernization. It has a new inverted suction second press with suction roll on top replacing an old plain press. It has a straight-through third press. There are all new dryers—16 five ft. dryers with anti-friction bearings for the second of three dryer sections. All other dryers have been re-balanced and provided with new gears and it would surprise many visitors, seeing the trim and bright appearance, to know some have served well since 1910. A new size press, new drum reel with center-wind for rolls up to 52 in. diameter and new reel stand and roll hoist for the Cameron winder are serving with a reconditioned calender stack at the dry end. Beloit built new machine parts.

No. 3's dryers have a new Midwest Fulton drainage, new Nash vacuum pumps on the couch and Roots-Connerville on second press, new air cooling and pressure blower for calenders. All Falls machines have new J. C. Ross Engineering ventilating, economizer and high pressure drying systems, stepping up efficiencies.

The new drive gives No. 3 a speed range of 200 to 1,200 fpm on groundwood and sulfite papers. It was supplied by Reliance Electric & Engineering Co. and is of latest type using a multiple generator system, having a mechanical differential section interlock regulator controlling an electronic panel which keeps each section in



TRANSFERS ON THE FLY

M & O ENGINEERS with aid of BELOIT IRON WORKS and JOHN B. KOHLER, Crystal Lake, Ill., consultant, designed this Beloit-built coater with Kohler flying paster unwind stand permitting continuous operation by transferring reels on the fly.

synchronism with the electronic speed regulator set by the operator.

This system gives greater flexibility and faster correction of speed than the older single type generator as supplied on No. 4 paper machine, which was installed before the development of the new system.

No. 4. This machine, 184 in. wide, was extensively rebuilt in 1949 as previously reported in these columns. It has a speed range now of 300 to 1,200 fpm on various kraft specialties.

Other Falls Additions:

Most improvements otherwise, in this mill, have been previously reported in PULP & PAPER. One was a wood room modernization where the biggest type of drum barker is used, in three sections, 51 ft. diameter by 67½ ft., and operators say both production-wise and quality-wise, it is an improvement. It is longer than the standard big barkers in the South.

Introduced recently at the Falls are new tile-lined vertical tanks for beater dump chest, broke chest and machine chest for each of the three paper machines. The nine tanks are equipped with Shartle propeller type agitation. The advantage of these vertical tanks is that they permit stock changes without loss of stock and maintain uniform consistency while doing so.

Also two kraft pulp storage tanks have been tile lined, and given stainless steel tops. These tanks are 30 ft. diameter by 48 ft. high and have Allis-Chalmers Side Flo agitation. Similarly tile lined was a 30 by 45 ft. groundwood tank.

A new Combustion Engineering 150-ton recovery furnace is going in at the Falls and the older unit will become a standby.

All storage tanks at this mill, which were formerly outside, have been housed to eliminate freezing and dirt. New sulfite flat screens were among other recent additions.

Fort Frances Machine Speed-Ups

At Fort Frances, Ont.:

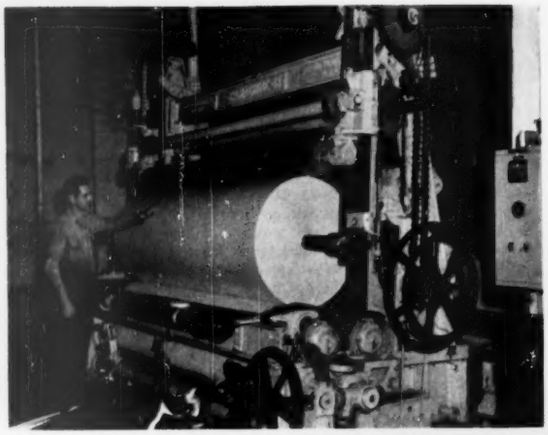
No. 5 machine. A modernization job on this 188 in. Fourdrinier was completed this year. It was down less than four weeks in March. It was speeded up to 1,200 fpm on newsprint. Previously modernized No. 6 machine is now primarily used on groundwood papers. No. 5 had been mostly on groundwood, but now runs mostly news.

No. 5 has a new headbox with 54 in. head and new slice with Van der Carr type lip made in M & O shops. It is of timber construction with stainless steel lining.

A new Dominion Engineering removable Fourdrinier and new suction press equipment from Dominion replacing plain presses made a big difference for this machine.

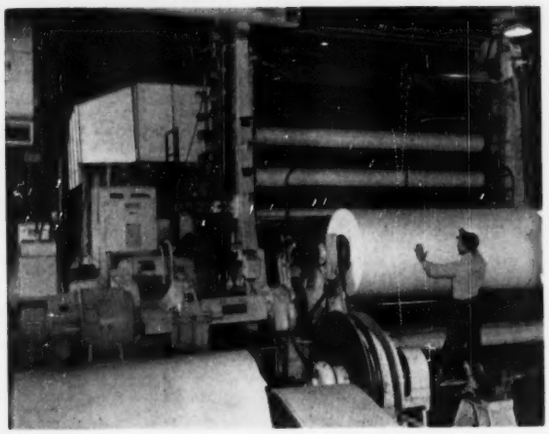
The new Harland sectional drive provided speed-up and permitted more working space and safety behind the machine. Only two sizes of motors are used in the Harland drive here, with motor generator and all controls in basement.

The stock system, preceding No. 5 ma-



KEEPING UP WITH NEW SPEEDS

THIS MIDDLE VIEW shows one of new Cameron Machine Co. rewinders added at Minnesota & Ontario Paper Mills in their International Falls mill in the program of speeding up and improving output on their paper machines.



DRIVES REEL AND CALENDER

ON M & O'S NO. 4 MACHINE at International Falls, where Reliance single generator sectional drive is used with Falk gears. This machine rebuilt in 1949, is 184 in. But on No. 3 is new Reliance Electric & Eng. multiple generator system.

WHERE PETUNIAS GROW ALONG R. R. TRACKS

KENORA, Ont. Mill of Ontario & Minnesota Pulp & Paper Co. A visiting PULP & PAPER editor vouches for the petunias along Canadian Pacific transcontinental line. Pictures of other M & O mills on cover.

ANOTHER E.D. Jones INSTALLATION

A new worm adjusting mechanism is featured in these 4 Jones Majestic Jordans at Weyerhauser's new board mill at Longview, Wash.

ANOTHER E.D. Jones INSTALLATION

These 5 Jones Majestic Jordans were part of the $15,000,000 expansion program at Hollingsworth & Whitney's Mobile, Ala., plant.

Majestic is the word for these Jordans

The Majestic is only one of the many sizes in which Jones Jordans are made. But such is the popularity of this high-capacity work horse that it accounts for 25% of the Jones Jordans sold to date. Like all Jones Jordans it incorporates exclusive features developed from our more-than-a-century of service to paper mills. For more details, ask your Jones representative or write for Bulletin 1007-A.

E.D. Jones

E. D. Jones & Sons Company, Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

chine, includes a battery of 20 Nichols-Freeman Vortraps for cleaning pulp.

A Ross Engineering of Canada aluminum hood was also a shiny new addition. Also a new Dominion reel and Cameron rewinder, the latter with General Electric regenerative braking type drive.

No. 6. Also a 188 in. machine, this was rebuilt in five weeks in late 1949 and has a range now of 550 to 1,150 fpm for mostly groundwood papers. It has a Reliance single generator sectional drive with control boxes on the back side of machine with the drive equipment and Falk gears.

A Dominion Engineering Fourdrinier was a new addition, but the suction box section was retained. The new headbox by M & O shops is similar to the one on No. 5.

Six new Shartle-Dilts Hydrafuges equipped with DeZurik two-way valves clean the stock. The Sveen-Pedersen saveall from No. 6 was moved over to No. 5 and on this machine is achieving an 80 to 85 percent retention of clay.

The press section of No. 6 was changed from plain to suction type and a new reverse second press was added. New Dominion Pope-type reel and a Cameron rewinder—the latter with 60 hp 3,300 rpm General Electric drive—were other replacements. It has a new Ross aluminum dryer hood.

No. 7. Modernization starts around the first of the year. This is the biggest and fastest machine in this mill—225 in. and 1,330 fpm on news. The rebuilt job will aim at a goal of 1,600 fpm.

Bird screens are ahead of this machine and a fifth Bird 3A screen will be added for increased capacity.

It will have a new Fourdrinier, all new dryer gears, new calender stack. A new Cameron rewinder with General Electric 4,000 fpm constant tension drive is provided. A new Harland drive on this machine will be similar to the one on No. 5, doing away with the master shaft, with controls in basement below the machine.

A Big New Grinder Room

The new grinder room at Fort Frances is one of the largest of its type in the industry—276 by 92 ft. and 45 ft. high—with three levels. Total capacity—433-tons a day. It is constructed with steel inside wall, corrugated metal outside wall and Fiberglas insulation between. The outside is painted with a maroon preservative paint. It is H. H. Robertson Co. type metal sandwich wall which the mill engineers declare is equivalent to a 10-in. brick wall.

Housing 13 large magazine type superhydraulic Waterous grinders for 4-ft. wood, there is room for one or two more if desired in the future. Canadian General Electric is supplying motors and ventilating system is by Ross Engineering of Canada. Wood enters by overhead conveyor, full length of the room.

Twelve grinders will be on paper groundwood (35 tons capacity each), with three pairs on each side of the room, each pair with a 5,500 hp G.E. synchronous motor drive in between. An 80-tons-a-day grinder will furnish stock to the Insulite building and insulating board plant, with a 3,500 hp Electric Machinery Co. drive.

These big units replace 45 pocket grinders which processed 2-ft. wood, had 75 tons less total daily capacity. Whereas 50 to 60 men were needed on a shift in the old grinder room, only about 12 will be needed in the new. Allegheny Ludlum type 304 stainless steel is used extensively in the new plant, even the grinder pits being in stainless and also the stock troughs. Four new Pascal bull screens are installed at end of the grinder room. Another Pascal screen serves Insulite pulp at the other end.

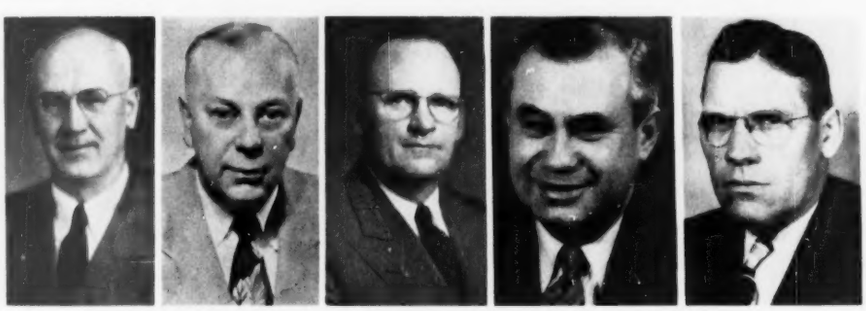
By a dam arrangement in front of the grinders, any grinder can be shifted to different species of woods—poplar, jack pine, spruce or balsam. If a stone dulls in preparing pulp for the newsprint side, then that grinder can be shifted to groundwood papers pulp which requires lower freeness. A more newly sharpened grinder can take over newsprint pulp.

Anyone who has visited the Falls and Fort Frances, stopping for customs, can see International Bridge, with its customs stations, and the pipe bridge on the top of the dam which carries the pulp pipelines between the mills. But no customs officers halt that 2-way flow. Sulfite is pumped from the Falls to Fort Frances and groundwood and Insulite pulp from Fort Frances to the Falls. At present there is pumped across the international border

MANDO EXECUTIVES

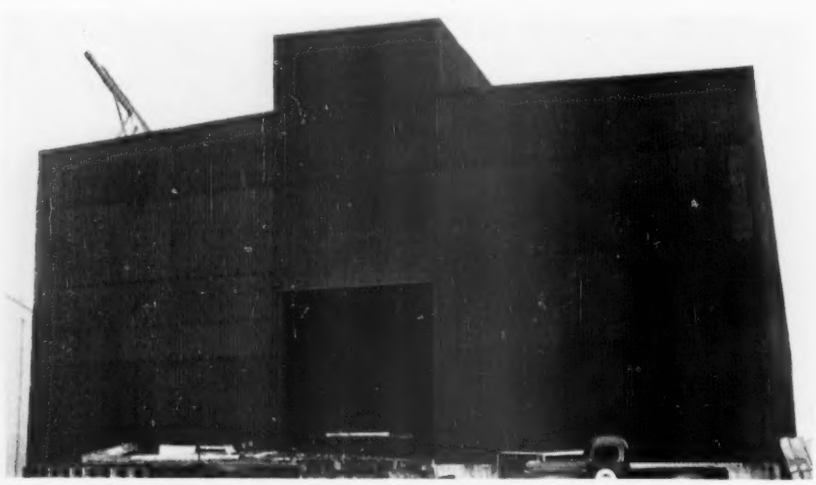
TOP—L to R—J. F. MacKELLAR, Vice Pres. and Gen. Mgr., Canadian Division, who is based at Ft. Frances; E. E. CRANDALL, Res. Mgr. of Kenora operations; R. A. CAMPBELL, Sales Mgr. of Paper Division (who came to Mando from being Asst. Mgr. at Blandin).

BELOW—L TO R—PAUL W. BARTHOLOMEW, Tech. Director, Paper Div., at the Falls, and not long ago from Kalamazoo; H. S. WUNDERLICH, Director of Research; and J. O. BURTON, Mgr. of new Research Lab at the Falls.



KEY MEN IN MANDO

L TO R—JAMES H. DAVIDSON, Chief Engineer of the M & O Paper Co.; W. H. SCHLAFGE, Production Mgr., Paper Division; G. N. WILLIAMS, Director of Industrial Relations; F. E. BOECKH, Prod. Mgr. of Insulite Div., and C. J. KUSNIEREK, Resident Engineer at the Falls.

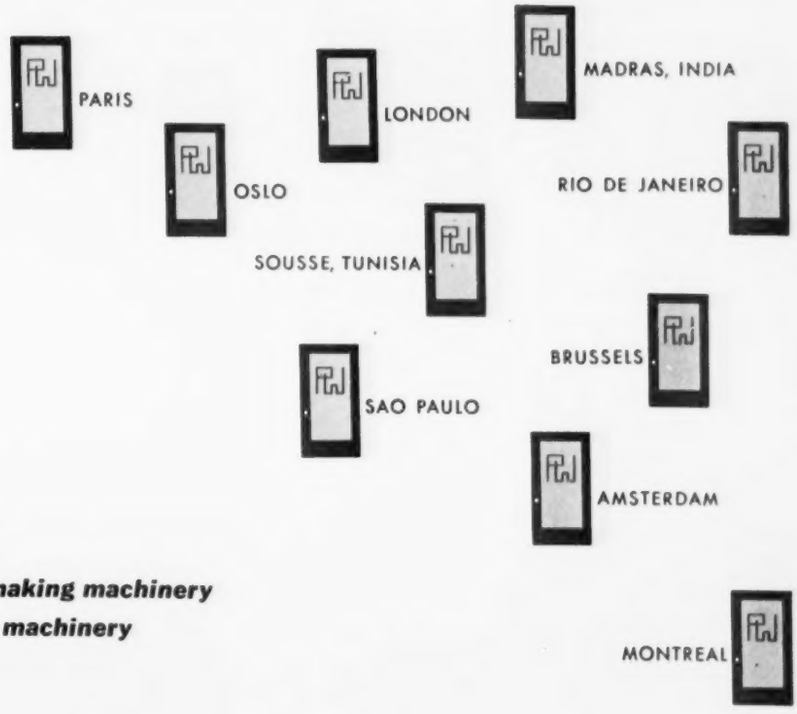


ONE OF THIS INDUSTRY'S LARGEST GRINDER ROOMS

FIRSTHAND "ON-SPOT" story of interesting details on this 45 ft. high grinder room at Fort Frances, Ont., was obtained by a *PULP & PAPER* editor. Read about it in this story on M & O—an exclusive, complete report on all new M & O improvements.

Wherever <u>your</u> office...

there's a PARSONS & WHITTEMORE office "next door"



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paper
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FROM PULP & PAPER EDITOR'S ALBUM

PULP & PAPER camera snapped these candids of Mando personalities on recent trip to those mid-continent mills:

TOP—l to r: CLARENCE LARSON, Vice Pres. in Charge of Production for entire company, whose whole career has been in M & O; E. J. (PIDDO) CARRIVEAU, Supt. of Pulp and Paper Mfg., Ft. Frances; RUDY PARADIS, Assistant to V. P. and Gen. Mgr., Fort Frances and former Mgr. at Howe Sound, B.C.; GEORGE McGREGOR, Development Engineer and longtime leader in Tappi; NORMAN L. JURGENSEN, Gen. Supt. at the Falls, who was born in Nekoosa, Wis., and spent many years at Kenora.

BELOW—l to r: ROWE C. WALES, veteran Sulfite Supt. at the Falls; ALBERT McKELVIE, Asst. Supt. of Pulp and Paper at Ft. Frances, in charge of Groundwood and News Machines; F. W. WOODMAN, Chief Electrician for all Mando Mills, resident at Ft. Frances; and WILLIAM T. MARTIN, Supt. of Sulfite, Kraft and Bleaching at the Falls, born in Ashland, Wis., and 33 years with Mando.

—all in steel pipe—approximately 350 tons daily. With new installations, it will reach around 420 tons.

A new 14 in. Transite pipe now connects from the new groundwood mill with the steel pipe on the bridge. Several 10 and 14 in. pipes are used across the bridge for stock and water. Brushes are run through these bridge pipes periodically to keep them clean.

The light tan brick woodroom is another attractive addition at Fort Frances. It has a two-way steel long haul and houses four big Horton barkers. Some pulpwood comes off r.r. cars and the rest of the wood comes into the woodroom from the river. Most important change now is —with new groundwood mill—all logs will be cut in 4 ft. lengths instead of 2 ft., eliminating some wood waste.

Kenora, Ont., Mill Improvements

Since Kenora Ont., is the newest of the three mills and is confined strictly to production of newsprint, there have been fewer major additions or changes here. Machines have been gradually speeded up and to accomplish this, larger motors have been installed on individual drive sections and a larger turbine-generator set furnished for Harland drives. Original Bird screens were replaced a couple of years ago with batteries of new high capacity Bird screens.

No. 8 machine. This is a 236 in. Dominion Engineering Fourdrinier, installed in 1924 land now averages, 1,345 fpm on newsprint.

No. 9 machine. This is a Bagley & Sewall Fourdrinier machine of 245 in. width installed in 1926. It now runs an average of 1,380 fpm on newsprint. Late in 1953 this machine was provided new Ross economizers and automatic temperature controls, and tile lined machine chest.

Production on both machines totals 365 tons a day. Changing a few motors, other minor changes—that's all the work done on them.

Another development at Kenora is the new wood refuse recovery plant in contemplation of the burning of bark for fuel. Primary fuel at this plant for steam generation is lignite burned on spreader stokers which were installed some three years ago.

World Record Set

A world record for production from a wholly-integrated pulp and paper mill was claimed Oct. 31 when the six machines of Union Bag & Paper Co., Savannah, Ga., turned out 2,054 tons of paper. It brought average production for October to 1,801 daily tons.

On the record day, digesters turned out 241 cooks—1904 tons. Balance of paper tonnage was made up from waste stock and pulp stock already in the system. Lost time on machines was 8 hours, 28 minutes that day.

Individual machine production: No. 1—195 tons; No. 2—244 tons; No. 3—132 tons; No. 4—714 tons; No. 5—303 tons; and new No. 6—466 tons.

Dr. Nadelman Now Heads Pulp and Paper Group

The paper technology curriculum at Western Michigan College has been "promoted" to a status as a department. Dr. Alfred H. Nadelman, curriculum director since 1948, is head of the new department. This fall it boasts 63 fulltime students under three instructors.

Japanese-Alaska Moves

A change of officers in Alaska Wrangell Sawmills Inc., may indicate this company is interested in becoming the American corporation to bid for Forest Service timber in Alaska for pulp and lumber mills to serve Japan.

Meanwhile, five officers of the Alaska Pulp Co., formed in Japan to invest in such an American corporation, sailed Nov. 4 for the U.S., headed by Ataru Kobayashi. This company reportedly has oversubscribed $4,500,000 for the investment. It is recognized that American capital from government or private sources is needed, and U.S. State Department and Defense Departments have indicated general approval of the plan. (See Nov. issue of PULP & PAPER, page 55, and Oct., page 54.)

The Wrangell company elected C. R. Bordeau, Olympia, Wash., president, C. T. Takahashi, U.-S-Japan import-export company head, as chairman (he was president) and treasurer.

Dan Rice, Seattle mill designer, is a director, and might be engineer for the pulp mill if it materializes.

Yale Gives Lawrence College Its New Prexy

It all ended with little but "mighty" Lawrence College, Appleton, Wis., home of the Institute of Paper Chemistry, graduate school of this industry, making an even-Stephen deal with the Ivy League. Douglas M. Knight, only 32 years old, Yale assistant prof of English lit. and honor Yale graduate, is new president of Lawrence, succeeding Nathan M. Pusey, who went to Harvard as its president. Dr. Knight, incidentally, was born in Cambridge, Mass., now Dr. Pusey's home.

W. E. Buchanan, president of Appleton Wire and director of Marathon; Elmer Jennings, president of Thilmany Pulp & Paper, and George Banta Jr. of the Banta printing firm, were trustees of Lawrence who chose young Mr. Knight.

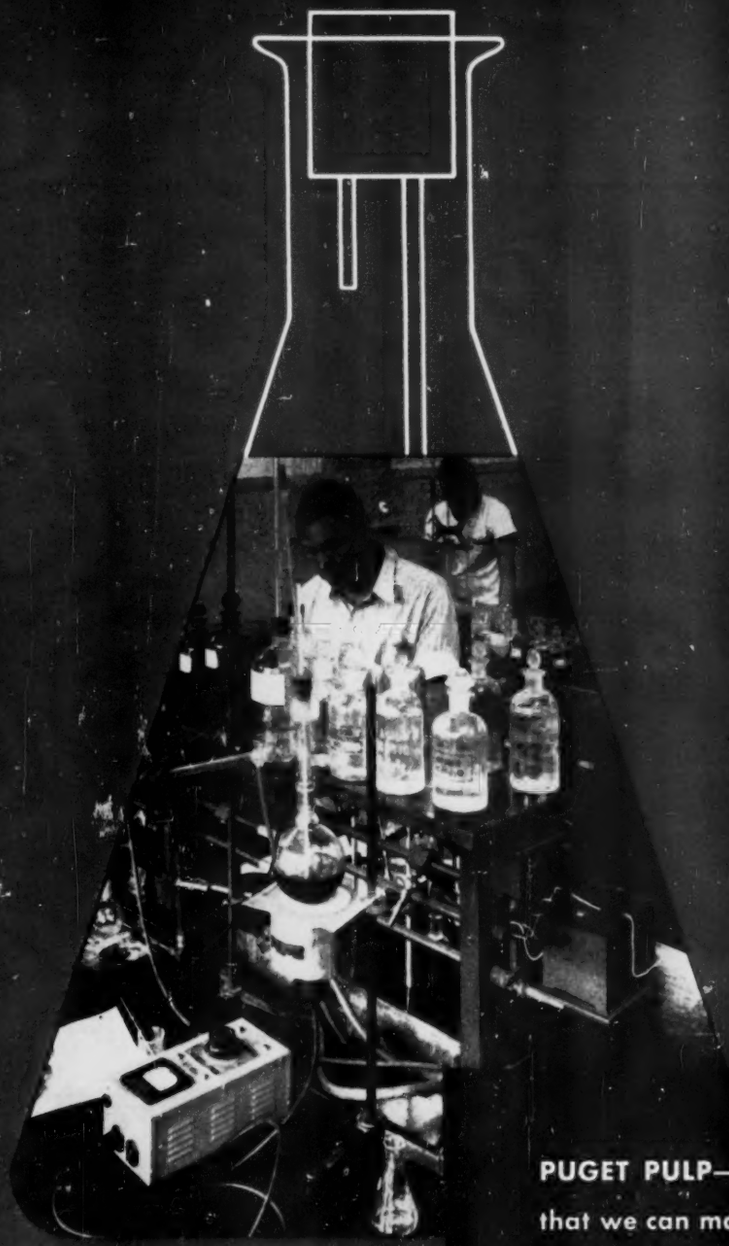
Paper Output Near Record

For the first nine months of 1953, U. S. mills made 19,900,000 tons of paper and paperboard, just a fraction of 1 percent less than the 1951 record, and now industry leaders look for an all-time new record in total 1953 output.

Henry Boon Dies Suddenly in Appleton

Henry G. Boon, 60, Kimberly-Clark Corp. director and vice president of industrial and public relations, died suddenly at his home in Appleton, Wis., Nov. 10, less than half an hour after he returned from Neenah where he was speaker at an Industrial Supervisory Conference dinner. He was reading a paper when he suffered a heart attack and was dead when the doctor arrived.

Born in Hortonville, Wis., Mr. Boon attended Lawrence College and joined Kimberley-Clark in 1914 as a laboratory assistant.



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PULP AND TIMBER COMPANY

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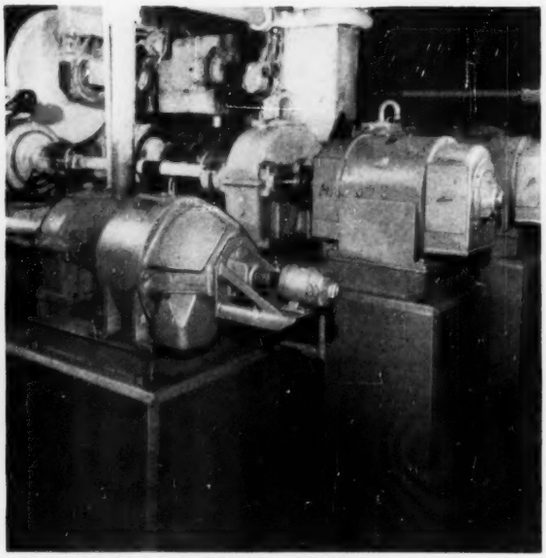
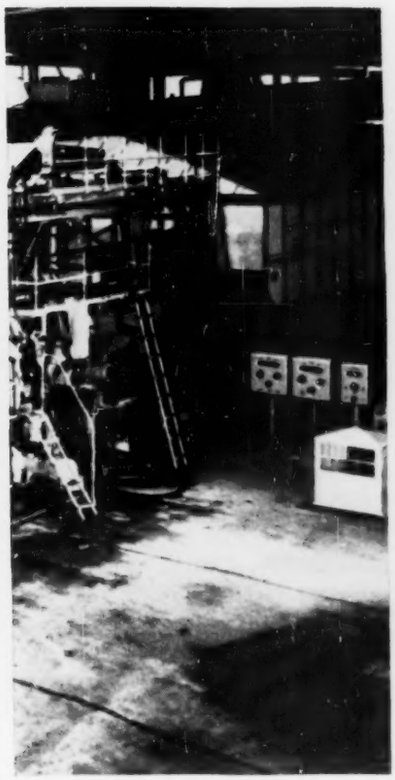
INCREASED HIGH-QUALITY PRODUCTION pours from Crossett's lightweight pick-up machine at speeds up to 1900 ft. min. A G-E sectional drive helps keep the output high by maintaining draws accurately, and responding to adjustment quickly.

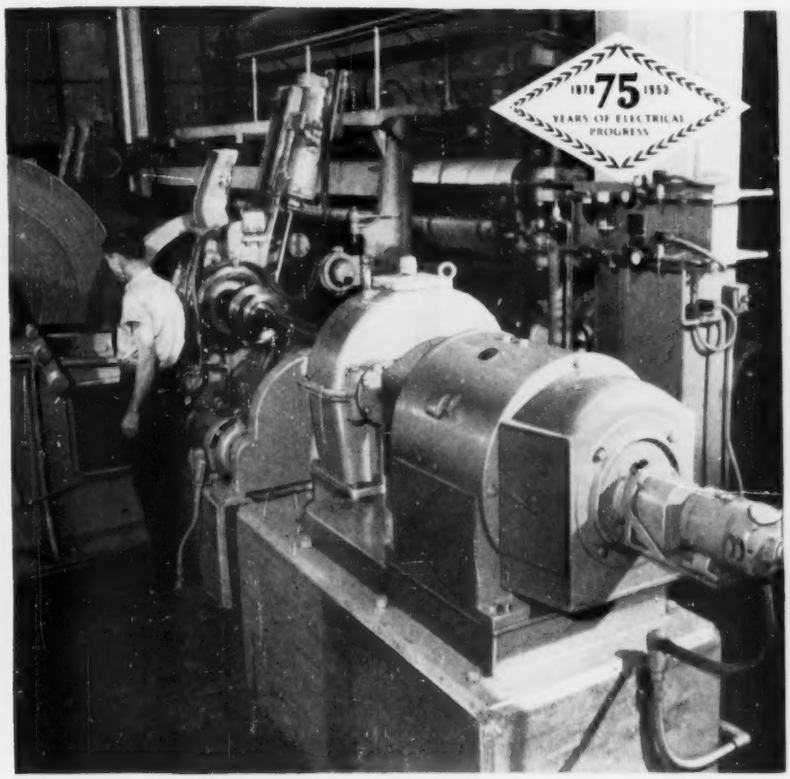
First high-speed lightweight pick-up

MULTIPLE-GENERATOR MEANS INDIVIDUAL DRIVES. Each section operates efficiently with fast, accurate control. Starting generator, with its complicated switching, is eliminated.



OPERATION IS CONVENIENT, PRECISE. Smooth press drive (30-hp G-E motor) and clover leaf drive (150-hp G-E motor) have fast slack take-up control for quick machine adjustment.





DRIVE FLEXIBILITY AT REEL—with more accurate control of sheet speed and tension—results in more uniform rolls. Tensiometer control of sheet tension is readily added.

averages 171 tons per day at Crossett

216-in. machine at Crossett Paper produces high quality kraft at speeds up to 1900 ft./min.

Production figures at the Crossett Paper Mill, Crossett, Ark., prove today's high-speed suction pick-up machines can turn out lightweight kraft at record rates.

In 1950, the first machine of this type went into operation at Crossett. Since then, this machine has operated at normal speeds of 1500–1800 ft./min., 24 hours a day, every day, with a minimum of unscheduled maintenance.

The machine's specially designed General Electric sectional drive, which increases flexibility by providing an individual motor and generator for each section, has helped reduce machine outages. With this drive, sections can be operated independently or together to speed wire and felt changes. Since section ammeters often indicate mechanical difficulties before they arise, preventive maintenance techniques can be used. The result: greater continuity of production.

If you would like to learn more about how G-E drive engineering can be applied to your paper machines whatever the grade of paper contact your G-E Apparatus Sales Office. General Electric Company, Schenectady 5, N. Y. 655-14

Engineered Electrical Systems for Paper Mills

GENERAL ELECTRIC

RESPONSIBILITY FOR SELECTING AND TRAINING EXECUTIVES

A MANAGEMENT PROGRAM

THE PULP AND PAPER industry, as the nation's fifth largest, and as one of the principal custodians of a natural resource, and of the support and life of many communities and basic national needs, is faced with a problem of selection and training of men for top management.

With its leaders groping for solutions, PULP & PAPER questioned Edward McSweeney, vice president and treasurer of Perkins-Goodwin Co., who has been active in management consulting since 1933, and is prominently identified with American Management Association and the School of Industrial Management of M.I.T. (Mr. McSweeney's articles have appeared in PULP & PAPER: *Future of Small Mills*, Sept. 1948: and *Government and Business*, Feb. 1952.) He has addressed many groups on industrial management.

Question: How would you state the problem?

Mr. McSweeney: This industry is changing in character in two distinct ways—it is headed in the direction of the chemical industry through development of by-product manufacture; and is becoming widely diversified and integrated in end-product merchandising. This calls for business management of the highest order. Furthermore, since wood is one of our important re-occurring resources, pulp and paper management is responsible to the public for handling this resource. This calls not only for business management, but a keen understanding of public responsibility.

This faces up to the point that the industry must not only have *good* management, but the *best*. Its problem is close to that of public utilities, with which it has always been closely allied.

Question: As a growing and developing industry, hasn't the industry been growing and developing men of the caliber to assume these responsibilities?

Mr. McSweeney: In many cases, yes. But we must remember the history of our industry, and the fact that most of its companies developed as proprietorships. In the 1930s, the growth of the industry and very "bigness" of the companies encouraged a trend away from proprietor management to paid management. This movement away from the "interested family" as managers has spotlighted the need for a program to find qualified men and see they get proper training for leadership. With a few notable exceptions, most of the companies in this industry do not have a management training program.

Question: How about the support the industry is giving to schools like the Institute of Paper Chemistry; University of Maine; University of Washington; Syracuse; Western Michigan College; Oregon State College; North Carolina State and Louisiana State? Won't it get managers from these schools?

Mr. McSweeney: The problem we are talking about is *top* management. Technical training will have some part in the development of production managers. But the real problem is development of men who can wisely guide their companies as they get closer to the complicated chemical field, and who can handle the decisions in end-product manufacture and sale. The support of the schools you named is essential, because technical training is very important. But it has little relationship to the problem of finding our management leaders of the future.

Question: How, then, do we set up a top management training program?

Mr. McSweeney: We are still groping for answers, and I don't pretend to have them. I, for example, have definitely reversed my feeling about professional managers such as the "favored few" type turned out by a few old line "business schools." I now realize the professional manager sets up stresses in an organization that are destructive. Top production and sales men instinctively resist the professional manager, and this resentment, which it most often is, doesn't lead to the internal harmony necessary for progress.

The first step is for present leaders to realize their problem and grave responsibilities. Too often the industry has been complacent, particularly in good times, and has not faced up to its problem until too late. First thing is for present leadership to set up a program to develop management abilities of its younger men.

Question: How do we spot men who are going to make good management leaders?

Mr. McSweeney: Our greatest hidden asset is our people. The industry will want to enter the race for recruitment of leading college graduates showing ability and flexibility for management training. There is keen competition for these men. The industry will also want to make itself attractive in the public eye so young men will see the management opportunities and want to enter the field. After the industry is attracting men in relation to its importance in the industrial life of the country, it then only becomes necessary to spot the men in the organization, and begin their training for top positions. We have the example of Dow Chemical Co. where men in key positions submitted, voluntarily, to close psychological examination to determine their capabilities. There are many other ways of finding the men with the necessary potential—provided present management sees the need and tries to find them.

Question: Let's assume candidates have been found for top positions. How are they to be trained?

Mr. McSweeney: There are many ways available. One is the School of Industrial Management at Massachusetts Institute of Technology, endowed for $5,000,000 by Alfred P. Sloan. This school has been given an additional $1,000,000 by Mr. Sloan for research to determine how it can best operate its industrial management program. J. R. Kimberly, of Kimberly-Clark, is an M.I.T. graduate, by the way, as is John Riegel of Riegel Paper Corp. The Harvard Business School has a 13-week program for management training. Gabriel Ticoulat of Crown Zellerbach is one from our industry who has taken advantage of this training. The American Management Association has regular seminars available for management training, and other media, such as Stanford, Boston University, etc., also offer management courses. These are but a few of the ways to receive the training. Our industry, with relatively few exceptions, has not been taking advantage of these facilities.

Question: How would you sum up this discussion?

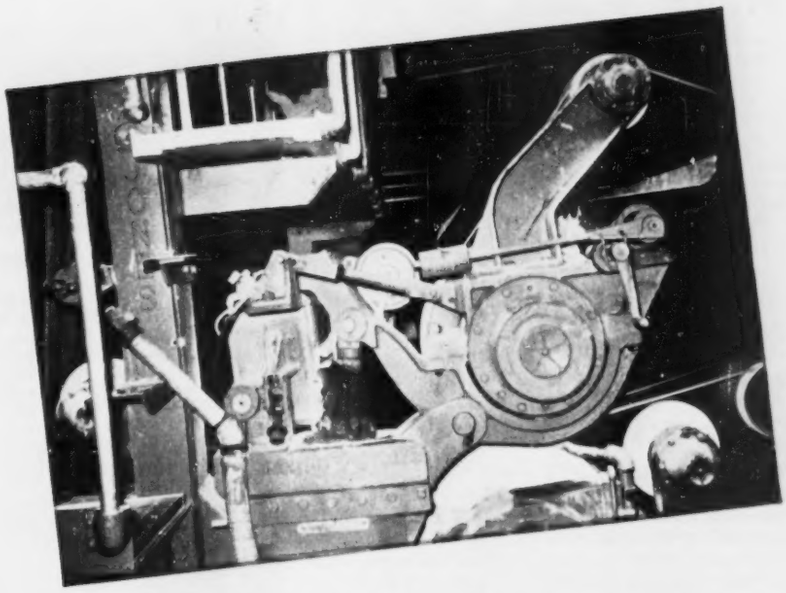
Mr. McSweeney: It is the responsibility of the head man of any company worthy of its salt to develop quickly a management program *from within* his organization. Trained leadership is necessary because of heavy responsibilities with which we are faced. These are responsibilities which have to do with our custodianship of a natural resource; of investments of hundreds of thousands of American citizens, of the support—and the life of many communities, and of a basis for a big share of the national welfare and defense. The main part of our problem is our recognition that it is a problem. Once that has come, men can be found and programs developed. Facilities are available once this decision is made.

MAJOR OBJECTIVES OF MANAGEMENT

Management objectives for his organization were set forth by one company president as follows, and are listed here in the order of importance which he considered them:

1. **To secure the assets of the company and prevent their dissipation.**
2. **To produce the maximum profits, keeping in mind the best interests of consumers, stockholders and employes.**
3. **To insure a sound gradual growth which will expand the investment base upon which profits are made.**
4. **To provide the highest level of morale among all levels of management and workers.**
5. **To give to the consumers of its products the highest quality and finest service possible.**
6. **To give to the consumers of its products the most useful products possible.**
7. **To develop ways in which the management and workers become part owners in the company.**
8. **To be the most successful and respected management in our industry and, in turn, work for the industry's advancement and preservation.**
9. **To provide community leadership which will, in turn, afford the finest community possible in which the company's employes live.**
10. **To provide and maintain sound and effective public relations.**

Actual installation of new Puseyjones Watermarking Attachment on upper press roll.



Modernize with New Puseyjones Watermarking Attachment

If you are using cumbersome, spring-loaded watermarking units, here is important news for you. Puseyjones has developed a new Watermarking Attachment with controlled air-loading for each marking unit. Mill-tested, mill-proved for superior, uniform watermarkings across the sheet. Installed in the press section, either directly on the upper press roll or on the run of the sheet between the presses.

In this new attachment, the drums are made with demountable rims, having marking bands molded thereto. Rubber marking bands easily replaced when changing watermarks. Present marking bands may also be used with this attachment. Write today or call our District Representative near you.

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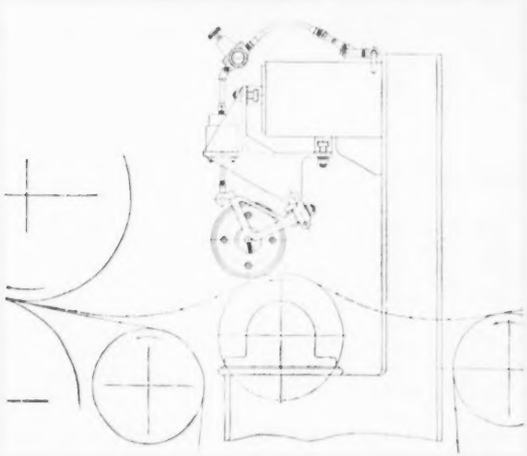
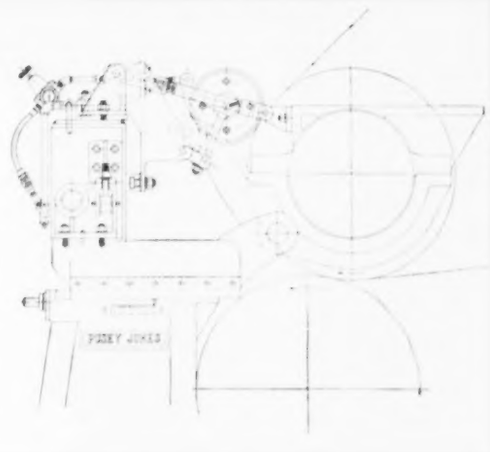
Typical installation between the presses.



Typical installation on upper press roll.



Pulp & Paper Visits New Government Agency Which "Fights" for Industry

JOHN D. DAVIS, Idaho born, Purdue grad, now with Mead, is pulp and paper's new Chief in D. C.

The Forest Products Division of the Department of Commerce, in its consolidated and condensed version, is now operating from offices in the Commerce building, Washington, D. C., recently visited by PULP & PAPER. Director is John D. Davis, on loan from The Mead Corp., with Merrill Lord, a two-year veteran of the Division under NPA, serving as deputy director and Commerce career man in charge.

With NPA abolished, the Division now operates under the Business and Defense Services Administration, which is headed by Chas. Honeywell, as administrator, and N. B. McCoy, as deputy. The new philosophy under which BDSA operates is to represent industry to the administration, in the same way labor has for so long been represented by the Department of Labor. So the job of the Forest Products Division will be to represent this industry in the government and fight for its causes and rights.

The Division is now compiling information on hardwood plywood to help U. S. industry battle against cheap imports and is studying the bagasse situation and particularly the coming commercial operations of the Valentine Pulp & Paper Co. Forest Products Division officials feel they have already served industry in securing at least temporary relief from the proposed mailing rate increases of magazines to South America. These increases would raise rates 150 to 1000 percent, and could conceivably force magazines to print in Canada or Mexico, or relinquish South American business.

The three sub-divisions under the Forest Products Division are: Lumber and Wood Products, headed by James M. Owens; Pulp, Paper and Paperboard, headed by W. LeRoy Neubrech; and printing and Publishing, temporarily headed by Mr. Lord. It is interesting to note that the complete staff at the present time numbers 13.

Mr. Davis was born in Pocatello, Idaho, April 18, 1909. He attended high school at Blackfoot, Idaho and in 1929, received a B. S. degree in chem. engineering from Purdue. He joined Mead in Chillicothe, O.; in 1931, transferred to the Kingsport mill technical service. In 1936, to Mead's Philadelphia mill as technical director. During war years, he was promoted to assistant manager and in 1946, to Philadelphia division manager. In 1949 he joined the head office staff, and became assistant to the vice president for white paper mills, George Pringle.

PARTICIPANTS IN Pacific Tappi meeting in Longview, Wash.: (L. to R.) ROBERT J. SEIDL, Forest Products Lab., Madison, Wis.; ROBERT W. MILLER, Pacific Lumber Co., Scotia, Cal.; RONALD FRASHOUR, Oregon Forest Products Lab., Corvallis; G. E. TOWER, Forest Fiber Products Co., Forest Grove, Ore.; Chairman FRED WELEBER, Publishers' Paper Co.; Moderator ALAN H. VROOM, Weyerhaeuser Timber Co.

Coast Tappi Hears of New Wood Products

The new boom in hardboards manufacturing in the Far West featured Pacific Coast Tappi's Nov. 3 meeting at Longview, Wash., devoted entirely to wood by-products. It drew 190 persons. Fred Weleber, Publishers' Paper, presided and Alan H. Vroom, Development Center, Weyerhaeuser, was moderator.

Robert J. Seidl, chairman of Lake States Tappi, who is on the Forest Products Lab staff at Madison, Wis., told how synthetic resins have made paper overlays successful for plywood, lumber, etc. Paper overlays give greater strength to veneers. They improve paintability of lumber and plywood.

How insulation, mattress filling, battery plate separators, mold powders and soil additives are products now of redwood bark was told by R. W. Miller, Pacific Lumber Co. Bank extractives are pilot plant products.

Ronald Frashour, Oregon Forest Products Lab, Corvallis, and G. E. Tower, supt., Forest Fiber Products Co., Forest Grove, Ore., discussed the dry and wet hardboard processes, respectively. The lab is investigating use of lodgepole pine, juniper and hemlock. Mr. Tower said in 12 years softboard consumption in relation to hardboard has been reduced from 9 to 1 to 2 to 1.

MOVE UP IN FOX RIVER PAPER

WILLIAM ROBERTS (left), is new Pres. and Gen. Mgr. of Fox River Paper Corp., Appleton, Wis., succeeding E. A. OBERWEISER, who became Chairman. Mr. Roberts, 42, joined the company in 1938 and has headed its manufacturing since 1944. He graduated from Loyola, Chicago, and U. of Chicago Law School. DR. H. P. DIXSON (right), succeeded Mr. Roberts as Vice Pres. in charge of Mfg. Phil Dixson, who is 40, joined Fox River in 1939 and became Tech. Director in 1943. He graduated from Iowa State College and got his ph.d. at the Institute in Appleton. DAVID E. OBERWEISER was elected Acting Chairman of the Board during his father's illness and continues as Treasurer. H. O. BARNEY is now Comptroller and continues as Purchasing Agent. E. V. WHITE was promoted to Accounting Director.

Port Townsend Mill Marks Silver Anniversary

Crown Zellerbach's Port Townsend, Wash., kraft mill recently held a 25th anniversary banquet—celebrating its increase of annual production from 21,000 to 125,000 tons. F. Leonard Ziel, manager since 1947, followed in the shoes of E. W. Erickson, now C-Z assistant v. p. in charge of manufacturing, and Al B. Layton, now vice president and director.

At the dinner, 35 of 84 service pins went to employes who worked in the mill since its start-up. Mr. Erickson returned to his old mill for event which Mr. Ziel m. c.'d and also Peter T. Sinclair, who started at Townsend and is now vice president of public and industrial relations, and Oakley W. Dexter, assistant v.p. in Seattle.

International Paper Man Wins Roll Wrap Idea Prize

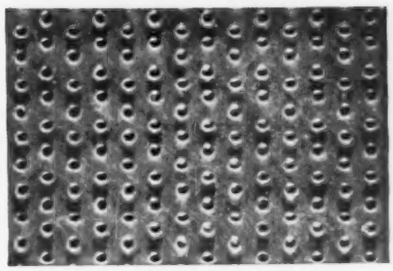
Fred W. Krumpe, of the traffic department, International Paper Co., New York City, won the ninth prize in a field of 583 contestants in a nationwide flat steel strapping contest. Operations and traffic men and executives in all types of industries and from railroads, etc., competed—even a woman secretary to a p.a. was among 18 winners.

Acme Steel Co., Chicago, presented Mr. Krumpe with $100 for his description of a method of strapping rolls of pulpboard to prevent them from tipping or shifting into side walls of freight cars.

Barker Plant at Coos Bay

Construction of a new building to house log barker, whole log chipper and screens started in October at Scott Paper Co's. subsidiary Coos Bay Pulp Corp., Empire, Ore. This is a segment of the plant's $1 million modernization-expansion program, according to Earl F. Anderton, mill manager.

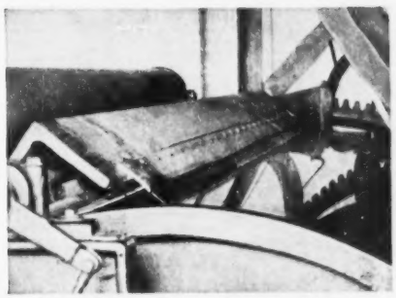
Screen Plates



Efforts to find screen plates with non-enlarging perforations led to trial of thin-gauge Inconel by a Western manufacturer of book groundwood whose plates were corroding beyond use in less than 5 months. This is one of four original plates of .018" Inconel with .045" perforations, photographed after more than 36 months of continuous use. The mill found "no . . . measurable enlargement of the perforations . . ."

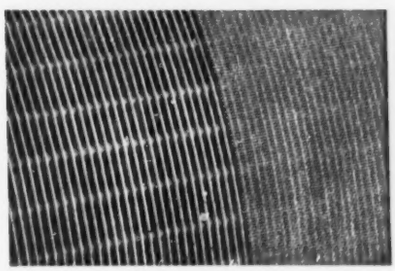
Are replacements costing you TOO MUCH?

Doctor Blades



"K" Monel doctor blades. The mirror-like appearance of the roll itself shows how well the "K" Monel doctor blade on this dryer protects the surface. Even when operated continuously, "K" Monel blades require a minimum of regrinding. Blade surfaces do not rust, and they resist roughening and damage from corrosive paper stocks, sours, cleaners and chemicals.

Winding Wire



Monel winding wire is used over structural rods of cylinders, over drainage strips of drums, and as binding wire over wire cloth faces of filters. Available with a tensile strength as high as 140,000 psi, Monel wire can be wound on its own diameter without fracture. It possesses high resistance to fatigue under corrosive conditions, gives from 2 to 15 times the service obtained from other materials.

You can be sure of this. Frequent replacements always cost too much.

For frequent replacements can be avoided.

You find that out when you use Inco Nickel Alloys like Monel®, "K"® Monel and Inconel®. They last longer (and require less maintenance) because they resist corrosion, abrasion and wear.

And you save money in at least three ways. Here's how you figure it:

On every replacement that you *don't* have to make, your first saving is the *price of materials*. Then you save the entire cost of *labor for installation*. And your third saving is the value of *production ordinarily lost* during downtime.

Count your downtime for honing and grinding doctor blades, too. That has to be done periodically, no matter what blade material you use. But "K" Monel runs longer between regrinds, and helps cut downtime to a minimum.

Inco Nickel Alloys hang up excellent performance records on jobs where many materials find the going rough. You can easily prove this. Just try a replacement part of Monel, "K" Monel or Inconel on machines that are hard hit by corrosion and wear. Then watch how they stand up!

If you'd like advice and help in picking the right metal for any corrosive pulp, paper or board mill job, don't hesitate to call on us. And remember, it is advisable to place equipment orders with your supplier well in advance of scheduled use.

Your local Distributor of Inco Nickel Alloys can give you the latest information on availability from warehouse and mill. We'll be glad to send you his address if you don't have it handy.

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IN ACTION AT SOUTHERN-SOUTHEASTERN SUPTS. MEETING:

Top, l to r: TOM S. COLDEWEY, St. Joe Paper Co., General Convention Chairman and retiring Southern Division Chairman; CLYDE G. JONES, Ecusta Paper, new Southeast Div. Chairman; R. W. MIZELL, Crossett Paper Mills, who gave paper on digester corrosion; EARL H. JONES, Crossett, collaborated with Mr. Mizell; C. S. HEUSTIS, Southern Paperboard Corp., who talked on cylinder papermaking; W. B. MILLS, St. Joe Vice Pres., luncheon speaker on taxation.
Middle row, l to r: H. E. WEHR, Supts. National Vice Pres. from Mead, Harriman, Tenn., mill; CHAS. McCARTHY, Plant Mgr., Southern Paperboard, and new First Vice Chairman of S.E. Supts.; R. E. BRINGMAN, St. Joe, and JAMES M. LOVERING, West Va., Covington mill—all serving on high yield panel. At end—RUSSELL T. HUDSON, Union Bag, new Southern Div. Chairman.
Below, l to r: R. H. WORRELL, Asst. Pulp Supt., Southland Mills, admiring his second Bolton Award prize; SAM E. CROCKER, of John W. Bolton & Sons, who had just presented it; T. R. BARNES, Champion, Canton, N. C., new S. E. Vice Chairman; ARTHUR ROSS, Vice Pres. and Asst. Gen. Mgr., Southern Kraft Div., International Paper, who talked on human relations; ION WALKER, Int. Paper, Mobile, Ala.

AT SOUTHERN-SOUTHEAST SUPTS. MEETING:

Top l to r: R. C. SKILLMAN, Champion Paper & Fibre, who presented their new movies on woods, mill and public relations; CARL O. KINGSBURY, Solvay Process, and KEN E. YOUNGCHILD, Southern Regional Mgr. for American Cyanamid (paper chemicals).
Second row l to r: RAY E. HARTER and WES GALLUP, of R. T. Vanderbilt Co., and ROBERT F. LINK, of A. E. Staley.
Third row l to r: JACK THOMPSON, Southland, TOM COLDEWEY, St. Joe, and OTHA WINNINGHAM, Nat. Container, all past Chairmen of Southern Div., and W. C. (Jack) HAYES Jr., Nat. Container, who is coming up ladder as new Third Vice Chairman.
Below l to r: SVEN FAHLGREN, Bird Machine, who served on water removal panel; VERNON WOODSIDE and W. A. STONE, Mathieson Chemical Co.

Corrosion Experiences Told at Southern Supts. Joint Meeting

PARTICIPATION by International Paper Co.'s Southern Kraft Division highlighted the joint meeting Oct. 28-30 at Edgewater Beach, Miss., of Southern and Southeastern groups of the Superintendents Association.

Arthur L. Ross, vice president and assistant general manager of I. P.'s Southern Division, spoke at one of the sessions on importance of human relations in any operation. Albert G. Rozyskie, Camden (Ark.) mill manager, became second vice chairman of the Southern Division of the association, with company assent.

Full participation by I.P. would bring eight mills into the association's Southern Division. The Georgetown, S.C., mill lies within the Southeastern Division territory.

For the Southern Division: Russ Hudson, Union Bag & Paper Corp., was elected chairman; Charles McCarthy, Southern Paperboard Corp., first vice chairman; and W. C. Hayes, Jr., National Container, third vice chairman.

For the Southeastern Division: Clyde G. Jones, Ecusta Paper, was named chairman; T. R. Barnes, Champion Paper & Fibre Co. (Canton), first vice chairman; R. B. White, Sonoco Products Co., second vice chairman; M. Lebby Boinest, Halifax Paper Co., third vice chairman; and Harry Rieck, Chesapeake Corp. of Va., secretary-treasurer.

Another joint meeting will be held in 1954, site to be selected by division officers. Total registration at Edgewater was 293, of whom 194 were "peddlers," 92 millmen representing 28 mills, and seven others.

Digester Corrosion Facts

Review of digester corrosion developments, presented by R. W. Mizell and Earl H. Jones, Crossett Paper Co., opened the program after brief remarks by Tom S. Coldewey, general chairman, from St. Joe.

Since replacement of corroded digesters is costly and lost production is serious, and their failure in operation a dangerous threat, mill owners face a problem. While operating but $16\frac{1}{2}$ years, Crossett is reported well into a third round of digesters ($1\frac{1}{4}$, $1\frac{3}{8}$, and 2-inch mild steel thickness, successively). Now used is an Audigage model FMSS-5 thickness tester manufactured by Branson Instrument Corp. This is a portable battery operated unit for non-destructive measurement of an unknown wall thickness from one side by the ultrasonic resonance principle. In 1949 Crossett and six other mills compiled their experience, resulting in formation of the 17 member sucommittee of Tappi now making a study of corrosion (see article on page 48 of this issue by J. R. Lientz).

One result of this later survey is a digester inspection data sheet and in course of preparation is a field manual for inspectors of alkaline digesters in service as a step toward development of comparable experiences.

Interest in rimmed steel or rimming type steel digesters rose from a feeling that pre-war digesters had afforded greater service life. But Crossett installed units made of A-285 GrB silicon free steel partially rimmed then killed in the mold with alumina. After three years' service, Crossett is not sure this is appreciably better than ordinary killed steels. The service life has been too short at Crossett to draw definite conclusions.

Referring to reports published on various digester experience, Mr. Mizell stated Type 316 stainless and Inconel are per-

forming with only light corrosive attacks in the vapor space. Crossett has had experience in welding to seal the Inconel lining to the carbon steel shell, with field applied Inconel liners to repair Type 347 lined digesters. Mills faced with extensive digester repair might investigate stainless steel weld metal overlay for seriously thinned carbon steel digesters. Some so repaired have been in service two years with such areas in good condition.

Trends in Cylinder Machines

Trend in cylinder machine operations is toward the establishment of a separate pulp mill for stock preparation, according to C. S. Heustis, production executive of Southern Paperboard Corp., who lauded the effectiveness of centrifugal acting equipment in ridding stock of dirt.

While cylinder machines have lagged behind Fourdrinier development, the current trend is toward wider machines and greater speeds. Trims up to 200 inches and 500 fpm rather than 400 fpm will become more common. Improvement in speed will not come from "gadgets" but from engineering and study of hydraulic principles, said Mr. Heustis. Larger cylinder diameters and better condensation removal systems will lead to increased production.

Now it is realized that good stock produces a good product, and new equipment has been accomplishing this, he said. A new operation can remove much asphalt and wax staining materials, and disperses the balance.

At luncheon, R. H. Worrell, assistant pulp superintendent, Southland Paper Mills, was presented the Bolton Prize Award by Sam E. Crocker of John W. Bolton & Sons, the second Bolton Award won by Mr. Worrell.

Russ Hudson, Union Bag & Paper Corp., discussed breaker stack and smoothing press operation. James Corbitt, Brunswick Pulp & Paper, followed with a carefully prepared paper on maintenance.

High yield pulping was discussed by a panel: H. E. Wehr, The Mead Corp., Harriman, Tenn.; Charles McCarthy, Southern Paperboard; R. E. Bringman, St. Joe Paper; and James M. Lovering, West Va. Pulp & Paper, Covington.

A sound movie on forest management by Champion Paper & Fibre was shown by R. C. Skillman.

Despite inequities in one way or another, the United States has the best ordered tax system in the world, was the theme of an address by W. B. Mills, vice president, St. Joe Paper Co., at Thursday's luncheon.

Water removal, principally through use of flat boxes, with manipulation of vacuum pumps and lump breaker roll provided a discussion by a panel. Members included: John Hoover, West Va. Pulp & Paper, Charleston; Carl Plumlee, Fleming & Sons; Russell T. Hudson, Union Bag & Paper; Dalton L. Pollett, Gaylord Container; John McDermott, St. Regis, Jacksonville; Sven Fahlgren, Bird Machine; and Carley Smith, Gaylord Container.

The closing day was devoted to golf, a deep sea fishing party, and a dinner.

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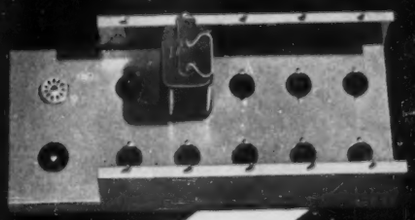

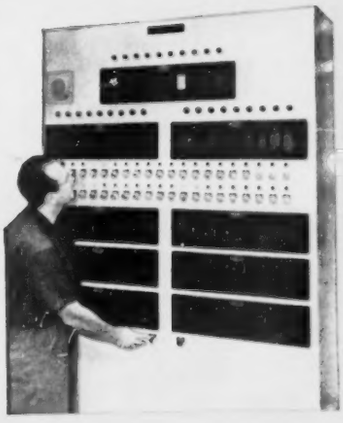

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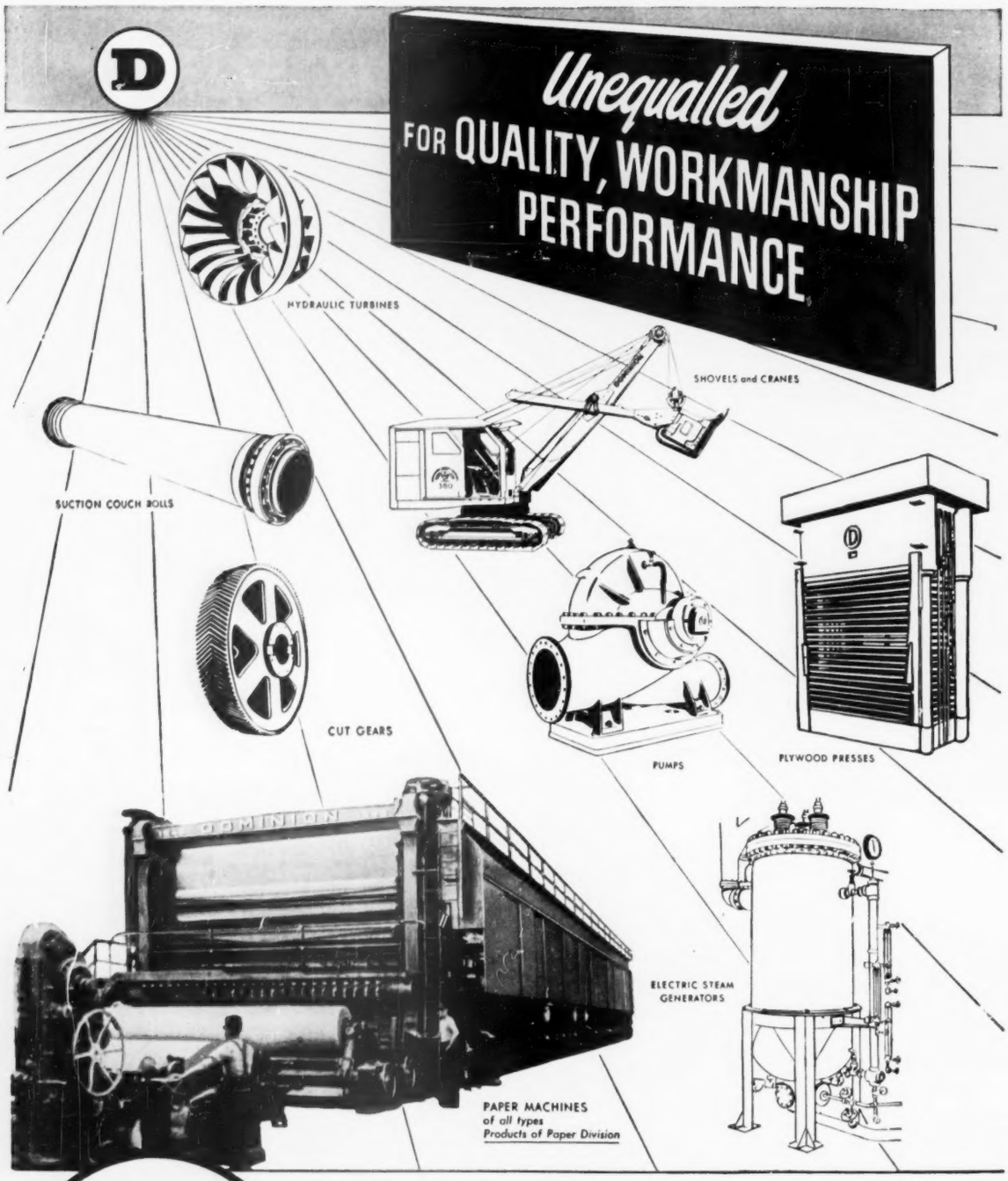

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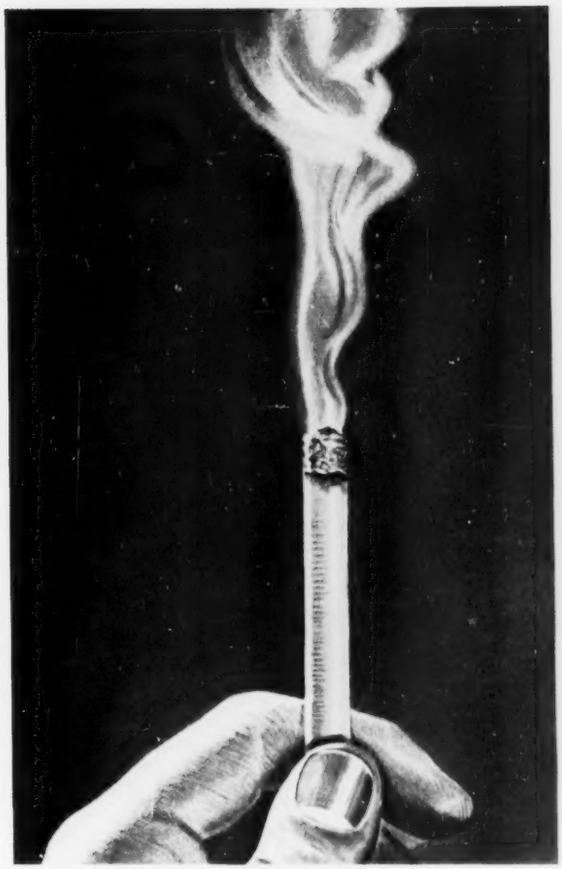
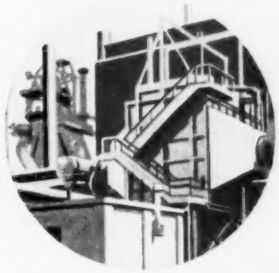


What do these two 'smokes' have in common?

THE SMOKE PARTICLES that cigarette filters attempt to trap are often as small as one 2 millionth of an inch.



Gases generated in industrial processes contain particles as minute as these—in addition to many a good deal larger. And, particularly in cases where a range of microscopic particles is involved, tests show Koppers-Elex Electrostatic Precipitators to be the most effective and efficient means of achieving these three benefits:

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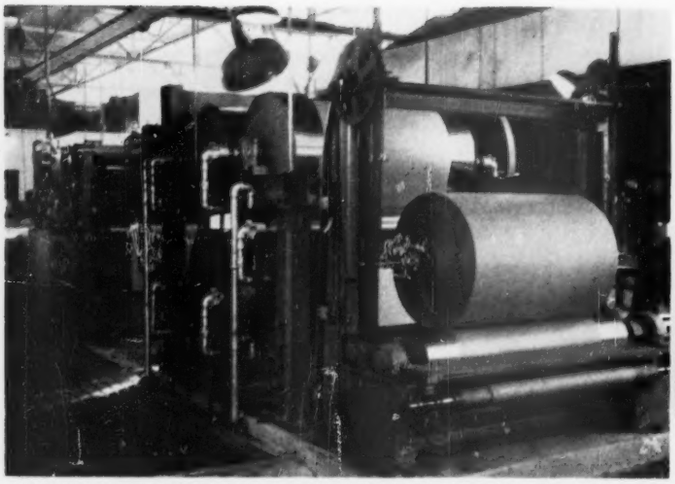
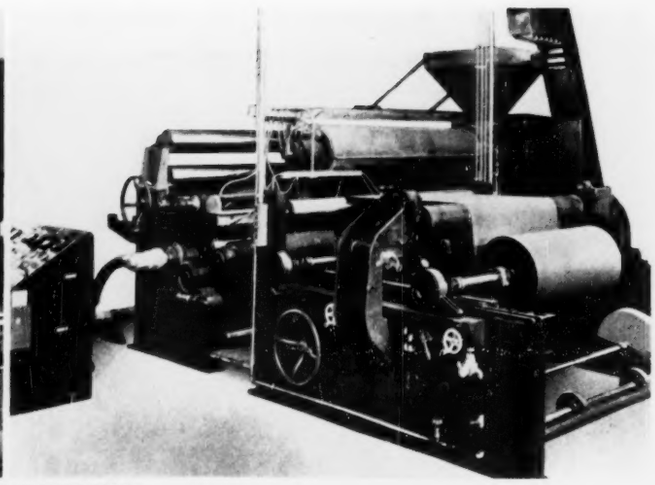
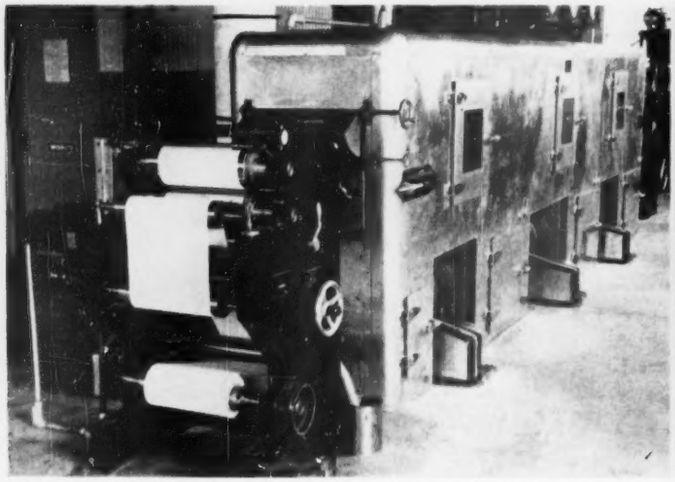


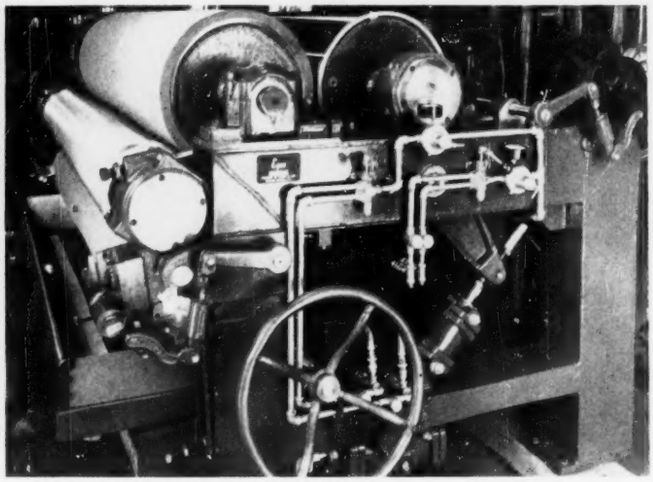


MULTIPLIED CONVERTING OPERATIONS INCREASE DEMAND FOR PAPER USES

HERE IS A LAMINATOR. At Camden, Ark., pulp and paper mill of International Paper Co., in the Bagpak Division. This is one of I.P.'s biggest primary mills.

THIS ONE LAMINATES AND COATS TOO. At Chicago plant of H. P. Smith Paper Co. It is a polyethylene coater and laminator.





A COATER FOR LABORATORY USE. At Phenolite Division of National Vulcanized Fibre Co. plant in Kennett Square, Philadelphia.

COATER USED TO INCREASE PRINTABILITY. This gravure offset print coater is used for clay coating in paper or board machine.

(All photos courtesy Frank W. Egan & Co.)

Major Trend in Primary Mills is to Converting But Independent Small Plants Need Have No Fear

By Frank W. Egan

CONVERSION OF PAPER and paperboard is being increasingly taken up by the primary pulp, paper and board mills. This is a natural trend for there are many converting operations that can be performed at the primary mill, easily and economically.

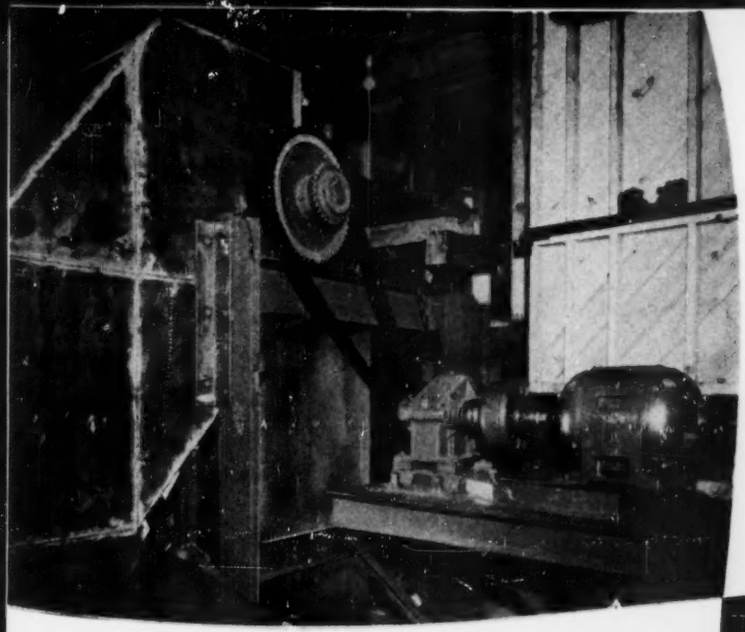
This trend, for a while, caused concern among independent paper and paperboard converting plants located near markets where the end product was used. As time went by, it became apparent this movement would not hurt the interest of the independent converter. Instead, it contributed to his welfare for it increased the demand, as well as supply, for converted products.

It has been my experience that the larger the field, the greater the interest and the lower the cost of any paper or paperboard converted product. Competition hurts no one providing they have something that can be used readily and is beneficial to the industry.

The paper or paperboard mill is interested in volume. The most important problem that a mill has to face is to keep its paper machine in continuous operation. Therefore, it is necessary we keep looking for outlets that will provide a continuous flow of the product. It follows that any converting operation considered must be in the same category as the volume and continuous demand for the paper or board. They are not interested in small and special orders, and it is this field that is the mainstay of converting plants. The old saying, "Do not put all your eggs in one basket," is as true today as it ever was.

The large paper mills, however, are branching into specialties which means they have to duplicate a converting plant and that brings in a problem for them. Their converting plant is far from the market where the end product is used and when you convert something and it creates bulk it increases freight costs that enter into the final cost of the wrapped container, carton, or package.

It is my belief that primary mills will continue to add converting machines as a part of their mill equipment, and as time goes on they will increase these operations and further expand their markets, but their activities will not hurt the small or large independent converting plants for there is a large field for both. Any ex-



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FRANK W. EGAN (left), author of this artic.e, and pioneer of much converting equipment, was snapped here by *PULP & PAPER* editor with his West Coast representative, JAMES S. THORNTON, of John V. Roslund Agency, Portland, Ore., in front of California Fabricon Products Inc., East Los Angeles, where Egan converting machinery was recently installed.

About the Author

Frank W. Egan became interested in the paper industry field in 1920 when he joined Johns Manville as a sales engineer, designing Transite hoods. From there he went to development of various kinds of converting equipment, forming his own company in 1946.

He has traveled to Europe and many countries in his mission. And recently toured Pacific Coast mills with his representative there, James S. Thornton of John V. Roslund Agency.

Mr. Egan was mill manager of American Multitone Paper Corp. in 1924-26, then was with J. O. Ross Engineering and John Waldron Corp., the latter for 20 years. He is president of Frank W. Egan & Co., Bound Brook, N. J. He has led industry joint research in coating and lectured at colleges and industry meetings.

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pansion in the converting field carried out by a mill will enhance the demand for converted cartons containers, bags, and packages produced by independent paper and paperboard converting plants located near the market.

About 35 to 40 years ago the trend toward packaging started. Today the modern grocery store has the bulk of its products in cartons or packages that are hygienically made and packed and have properties such as moisture-proofness, grease-proofness, and visibility, and the same thing is true of other markets.

Paper wrapping of shirts, belts, and various articles of clothing, household equipment and furnishings such as blankets and the like, add appeal to the products when they are displayed. Paper and board packaging is being used even for heavy motors and machinery, for gardening utensils, seeds—and plants; in fact, there seems no end to where converted paper or board products cannot help the manufacturer as well as the consumer. A good package invites the buyer to enjoy, and purchase, the product he sees on display.

It's an old story that we get into a rut. As each of us grows older we form a pattern and seem to follow the same procedure day after day, season after season. But the new packages and cartons divert us from our established habits and bring us into new fields, and in so doing they help us individually. They add to the economic well-being as well as the health of our communities and nation, and the world in general.

Since the last war we have entertained many friends from overseas. They have come in pairs and in groups, and have passed through our paper and paperboard mills and also our converting plants and have carried our ideas back home. Most of the nations in the European area and the Asiatic area have installed newer, and more, paper and paperboard converting machines.

Impregnating, laminating, coating, creping, embossing and printing operations have unlimited possibilities. Impregnating of paper or paperboard prepares it for use in the automotive, construction, plastic and other fields. Laminating of paper or board to film such as polyethylene, vinyl, nylon, cellophane, or to foil such as aluminum and to news, litho, label, or kraft papers increases the demand manyfold. Coating of paper and board with the organisols, plastisols, vinyl, gum, wax, asphalt and tar has brought many new products into the market. The same thing can be said for creping and embossing where utility or ornamentation is a requirement. With the present trend of printing, utilizing the offset gravure, letterpress and lithograph methods, the possibilities are untold.

Converting of paper and paperboard is an interesting and intriguing operation and you can tell from the end products that are developed that they represent a challenge to manufacturers of paper and paperboard that keeps their field a very exciting one.

The packaging shows and exhibitions are a joy to behold and the manufacturers of paper converting equipment are kept busy supplying the growing needs of manufacturers of paper and paperboard cases, cartons, packages, bags and specialized articles.

OTHER REASONS FOR THE TREND TO CONVERTING

The trend toward more converting and finishing of paper and paperboard right in the primary pulp and paper mills is one of the notable trends of this industry. A Wisconsin paper company president pointed out to a PULP & PAPER editor that converting in the same establishment that makes the paper or board is important in these days of high taxes and high labor cost. The tax is on one industry or establishment instead of two or more.

Another leader in this industry pointed out that a paper manufacturer who can offer a product with one of the converting stages already done will have a competitive advantage in his field, especially in tougher selling times.

PULP & PAPER has invited Frank W. Egan, a veteran of 23 years of experience in developing and designing new and improved paper converting machines and processes, to express his views on this subject in this article.

MOVE IN NEW KEY POSITIONS

EDWARD L. COWAN (left), newly appointed Chief Engineer for Bowaters Southern Paper Corp., Calhoun, Tenn., new mill which is slated for startup next April. Mr. Cowan had been Asst. Chief Engineer at Gaylord Container Corp. since 1940. Born in Meridien, Miss., he graduated from Mississippi State in e.e. in 1930, and started in paper industry in 1932 with United Engineers on construction of the Gaylord mill at Bogalusa. He was Power Supt. there before becoming Assistant Chief.

MILLARD B. HUNTER (right), new representative in the pulp and paper sales field for International Nickel Co., New York, succeeding Chas. J. Brown, transferred to the petroleum industry. Mr. Hunter was born in Albany, N. Y., and graduated from Union College in 1950 in chemistry. He has been with Inco for over a year. He will work with Herb Teeple, digester corrosion expert, and Dick Faber in pulp and paper.

272 in Camas School

Crown Zellerbach Paper School opened its 21st year at Camas, Wash., this fall with 272 employes enrolled. Dean is F. W. Flynn, assistant kraft superintendent, Camas; L. F. Maybach, project engineer at Camas, is principal, C. A. Enghouse, assistant resident manager, West Linn mill, is associate dean, and Leona Blair, stenographic supervisor at Camas, is registrar.

Russ McVicker, V.P. of Chillicothe Paper, Passes

Russell J. McVicker, 65, vice president and veteran purchasing officer of The Chillicothe Paper Co., Chillicothe, O., died Nov. 1 in a Columbus, O., hospital of a heart ailment. He was one of the most widely known industry executives. Mr. McVicker's nephew, J. William McVicker, traffic manager of the company, had been assisting his uncle in some purchasing activities for some time.

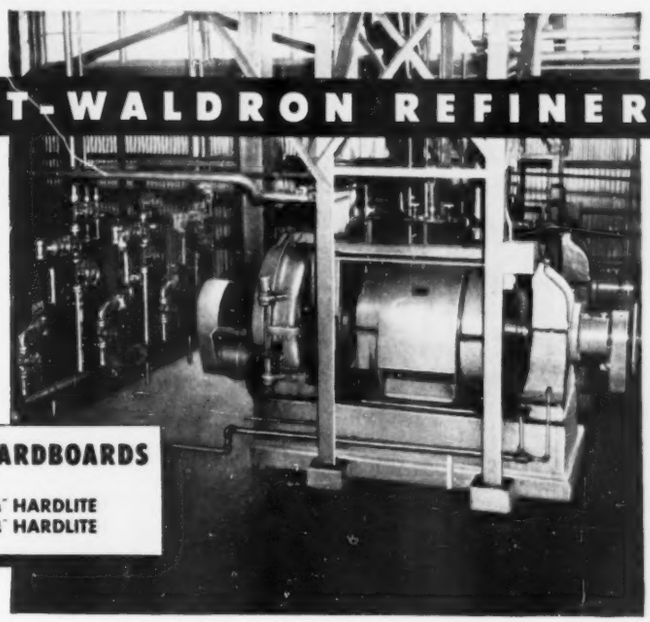
Over a year ago, Russ McVicker made an extensive trip to the Pacific Coast. His widow, a son, Russell, Jr., and two daughters and a grandson survive. He was one of the former Mead mill group that started the Chillicothe company in 1919 and his father, Hector, was first president of Chillicothe Paper.

Western Conservation Group's Program

The 44th annual forestry conference of Western Forestry & Conservations Assn., Dec. 9-11 in Seattle, Wash., prominently features pulp and paper leaders and subject material of concern to the industry in its program. E. W. Tinker, executive secretary, of American Paper & Pulp Assn., will discuss "Tree Growing for Pulp and Paper;" and William D. Welsh, Crown Zellerbach Corp., will talk on "In the Public Interest."

Another HARDBOARD PRODUCER Chooses

SPROUT-WALDRON REFINERS



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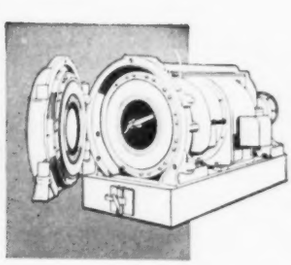

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PULP REFINERS

258

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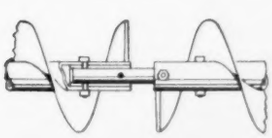
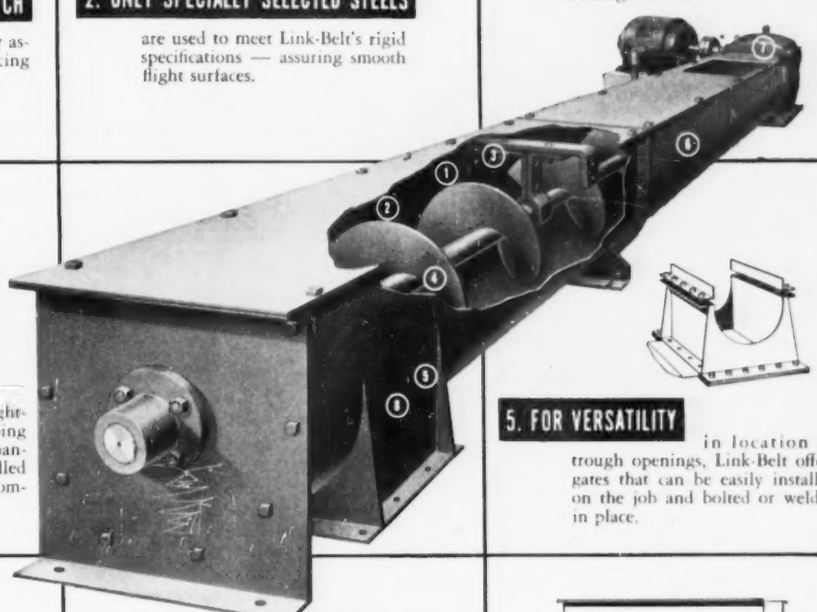
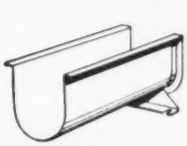


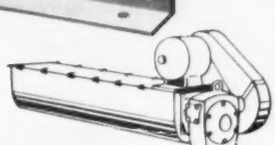
4. FOR YOUR PROTECTION straightness is checked before shipping and extra care is taken in handling and loading. Jig-drilled coupling bolt holes assure complete and easy assembly.



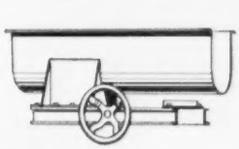
5. FOR VERSATILITY in location of trough openings, Link-Belt offers gates that can be easily installed on the job and bolted or welded in place.



6. YOU'LL DISCOVER that troughs are accurately fabricated to assure better fit of all components. Link-Belt offers a choice of metals to fit your particular application.



7. ONLY LINK-BELT builds a complete integrated line of gear and chain drives, couplings, bearings. One proved source . . . one undivided responsibility.



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ADD 110 TONS DAILY OF BLEACHED SODA PULP CAPACITY AT MEAD

General view of new additions at Chillicothe, O., Division of The Mead Corp., Fibre Making Processes drum barkers in right background, across the field; 743-ft. long water flume leads to barkers for carrying wood. Small building in middle background is chipper plant, housing two Carthage chippers each driven by 400 hp General Electric induction motors and two Allis-Chalmers Lo-hed vibrating chip screens. In foreground is steel 68 ft. high chip bin (design of Fred Hurter, Montreal engineer) with two partitions for different wood species. Conveyor in foreground leads to top of digesters.

Mead Mill, Famous for Efficient Flow, Stays in Character with New Expansion

THE BIG NEW soda pulp making facilities at the Chillicothe, O., Division of The Mead Corp. are another step in that paper mill's program to keep improving the flow of materials through the mill, Division Manager O. B. Mason told PULP & PAPER.

"Although papermaking has been carried on on our site for over 150 years, changes and improvements have always kept the goal of efficient material handling in mind," Mr. Mason says.

"Our new pulp mill, which provides us a straight-forward flow of materials from the new woodyard to the digesters to the bleach plant, has been envisaged for many years."

A PULP & PAPER editor recently viewed the new Chillicothe installations which embody new ideas of woodyard handling and wood preparation through the soda mill. Engineers and industry men from other mills have spoken often in admiration of efficiently laid out flow of all pulp and paper production at Chillicothe, much of it dating from construction that was planned and built as long ago as 1908 under direction of George H. Mead, who is now honorary chairman of the company.

First weeks' production of the new pulp mill indicates that a high degree of uniformity will be attained by the equipment. Start-up was smooth and pulp from the first blow was of fine quality.

Mead engineers had formidable problems to meet to keep the added pulpmaking facilities in line with the desired goal. Two city streets, a railroad, and a proposed four-lane highway had to be taken into account. Construction of the latter is about to begin; the highway will have to pass beneath one of the chip conveyors just after it passes over the railroad tracks which supply the mill.

Before the additions, the division listed capacities of 125 tons soda pulp, 100 tons de-inked stock and coated book, catalogue, kraft, sulfite and other papers totalling 550 tons daily. The new equipment adds 110 tons daily bleached soda pulp capacity and is a further step in integration.

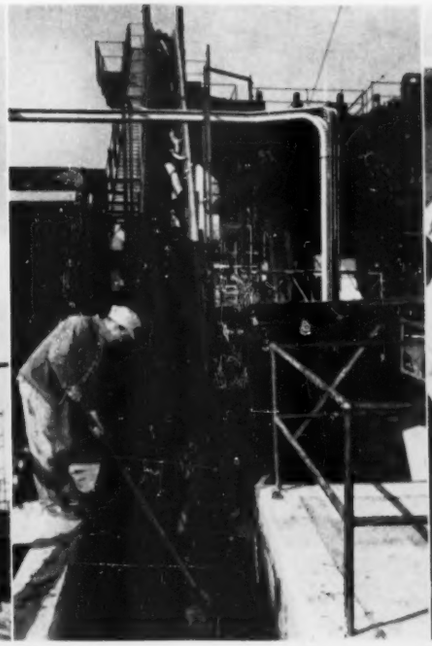
Only four men per shift are required in the entire new digester, brown stock washing, and causticizing building, and instrumentation and automatic controls are outstanding features of the new set-up.

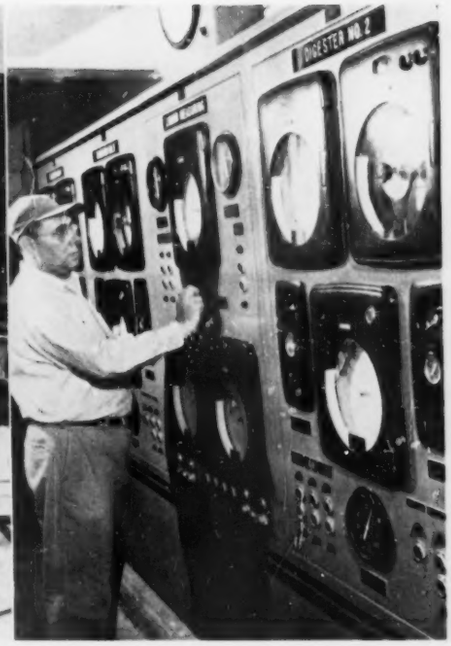
The new mill is designed to handle two kinds of wood. In addition to a mix of aspen willow, cottonwood, yellow poplar, gum, etc., previously used, the mill will handle oak. Cooks of each type of wood can be made simultaneously, or a mixture of the two can be processed.

Oak is the most abundant wood in this Ohio region, and putting it to use here provides for its increased mill requirements at a reduced transportation cost, and new revenue for wood producers in this area.

Engineering of the project was done by Mead's general engineering staff headed by C. Noble Mull, chief engineer for all Mead operations. Much of the construction was by the Chillicothe Realty Co., a Mead subsidiary.

Start-up of the new mill was expedited by Pulp Mill Superintendent Clarence Garrett and his assistants and tour foreman; George H. Sheets, then Assistant to Division Manager, O. B. Mason, and now promoted to a new post in the company, P. E. Fuller, project engineer, and Booker Bunch, process control supervisor in the division technical service department.





VIEWS AT NEW SODA PULP MILL IN CHILLICOTHE:

Left: A FULLER CO. AIRVEYOR SYSTEM unloads lime from r. r. cars to this lime storage tank and it is continuously fed to a Dorrco Slaker by Merrick Feedo-weight. The Dorr recausticing plant is here.

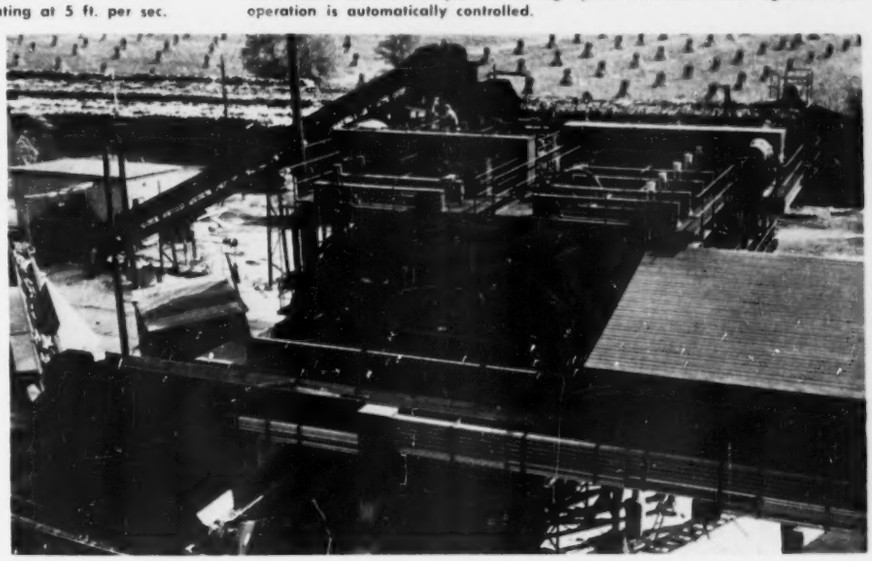
Middle: THIS IS END of 743 ft. long water flume, circulating at 5 ft. per sec. and 12,000 gpm, and from here logs go up inclined conveyor to two Fibre Making Processes drum barkers at the right.

Right: THE SODA PULP MILL digester operating floor. Operator is setting controls on Foxboro automatic liquor measuring system. Almost entire digester room operation is automatically controlled.

Wood Preparation

All wood received is 5 ft. long and from 4 to 15 in. in diameter. It comes to the woodyard in trucks and r.r. box cars, and from either can be unloaded to storage or directly to the new water flume supplying the wood-room. Two parallel railroad tracks serve the yard; a third may be constructed if need arises. One track runs beside the flume; the second is 140 ft. away. Space for three storage areas exists between and on either side of the two tracks.

The yard now stores wood in random piles, instead of the rick storage method as formerly. Two Manitowoc crawler cranes lift wood from cars or trucks with orange peel buckets and dump it on piles 76 ft. wide, 300 ft. long, which can be built 40 ft. high. There are currently seven storage piles, each holding about 2,600 units.



TWO FIBRE MAKING PROCESSES drum barkers in woodyard of Chillicothe mill are 12 ft. in diameter by 45 ft.; each holds 16 cords of wood.

A JEFFREY 42-in. Belt Conveyor is shown leading from base of chip bin to top of 86-ft. high, 5-story Soda Pulp Mill in background which houses four Chicago Bridge digesters—newest addition at the Chillicothe Mill of The Mead Corp. Note conveyor is completely housed.

Wood floats from storage to the barker in a 743-ft. long flume. A Frederick pump circulates water at the rate of 12,000 gpm, giving it a velocity of about 5 ft. a second. As the water returns to the pump, refuse is screened.

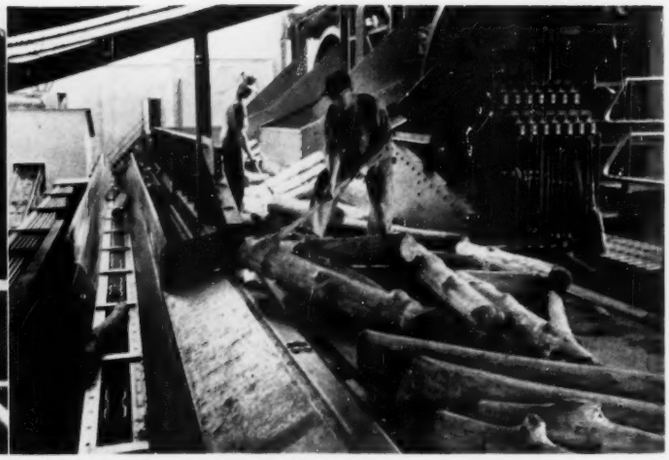
All unpeeled wood goes to two new Fibre Making Processes, Inc., barking drums, each 12 ft. in diameter by 45 ft. Logs from barkers fall into a 6-ft. wide Jeffrey rubber belt conveyor and are carried to two 88 in. 10 knife Carthage chippers in the woodroom, operated alternately. Bark is conveyed to an incinerator to provide heat for the flume water in the winter, and for buildings in the woodyard.

Peeled wood by-passes the barkers. A 60-in. wood saw breaks down oversize wood. The woodroom is a 49 by 104 ft. concrete-block building, 40 ft. high. One of the chippers has an extra heavy disc for oak. Chippers are driven by 400 hp General Electric motors.

A 110-in. Rogers knife grinder is used to grind chipper knives.

Chips are conveyed by a 36-in. Jeffrey rubber belt conveyor and a 9,000 cfh. Jeffrey bucket elevator to two Allis-Chalmers Lo-hed vibrating chip screens, operated in parallel. The oversize chips are fed to a Jeffrey swing hammer chip shredder.

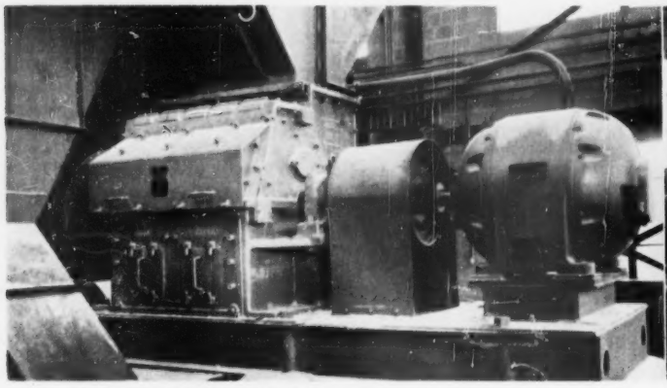
Accepted chips are conveyed to the top of a 68-ft. high Hurter-type chip bin, 260 ft. away, by another 36-in. belt. The chip

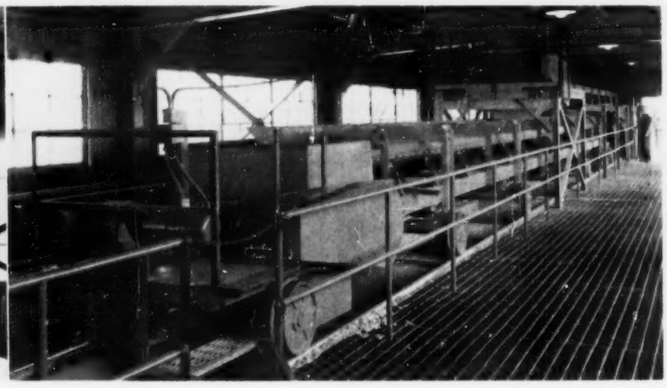


EXCLUSIVE VIEWS OF MEAD'S NEW WOOD PREPARATION INSTALLATIONS

Left: UP FROM THE NEW FLUME THEY GO. Jeffrey "Jackladder" combination chain with spur attachment taking logs from Chillicothe mill's flume to chain conveyor feeding barking drums. On left, close-up of conveyor delivering flume refuse.

Right: DOWN THEY COME FROM F-M-P BARKERS. Jeffrey 60-in. sorting belt installation at discharge end of Fibre Making Processes barkers. Reject chain conveyor with special pusher bar attachments every 6 ft. takes logs back to barking drums.





Left: RE-CHIPPING IS DONE HERE. Jeffrey re-chipper hammermill in chipping plant of new wood preparation installation at Mead Corp. in Chillicothe.

Right: AND HERE CHIPS ARE FED INTO BINS. Shuttle belt feeding chips to storage bins of Hurter design, with two compartments for two species of wood.

bin (design of Fred Hurter, Montreal engineer) is 26 by 100 ft., and made of steel except for a Transite-sided penthouse enclosure and storage area at base. It is partitioned into two sections for different wood species. A shuttle conveyor over the bins distributes chips.

Each bin has an Impco twin screw feeder to deliver chips to the 42-in. wide Jeffrey belt conveyor below the bin. A 36-in. diameter Stearns magnetic pulley removes any tramp iron. The conveyor carries chips to the top of the 86-ft. high digester building, 340 ft. distant. This conveyor also vaults a city street.

The woodyard, woodroom, and chip bins are designed for a 16-hour operation. Needs of three-shift digester operation are supplied. A Merrick Weightometer is used.

Pulp Mill

The digester building is a 5-story L-shaped concrete block building. The digester wing is 35 by 100. The brown stock washing wing is 36 by 81. Interior of operation room has a glazed tile wainscot.

The digester room operation is almost entirely a push-button and instrument operation.

All machinery is interlocked, so that exact sequence must be maintained at all times; the interlocking system also automatically shuts down the filling operation in reverse sequence when the Weightometer indicates that the correct amount of chips has been supplied. Counters on the control panel collect the total tonnage figures for wood consumed. Liquor is metered into digesters by a Foxboro automatic system. Amounts of white and black liquor desired are set on the control board instruments.

The four Chicago Bridge and Iron digesters are 11 ft. 7 in. inside diameter and 51 ft. 10 in. from flange to flange with a nominal volume of 4,600 cu. ft. They are equipped with Fibre Making Processes indirect heating and circulation. Direct cooking with steam, forced direct cooking, and forced indirect cooking are possible, the latter being preferred. Each has a Cochrane condensate removal system.

The 24-ft. diameter, 100,000-gal. blow tank was manufactured by Chicago Bridge. Steam passes to a Foster Wheeler heat recovery system, controlled by Honeywell instruments.

The brown stock washing equipment consists of two Impco preknotters, a two-stage Impco washing system, with 11½ by 12 ft. washers, designed so it can be converted into a four-stage counter-current system.

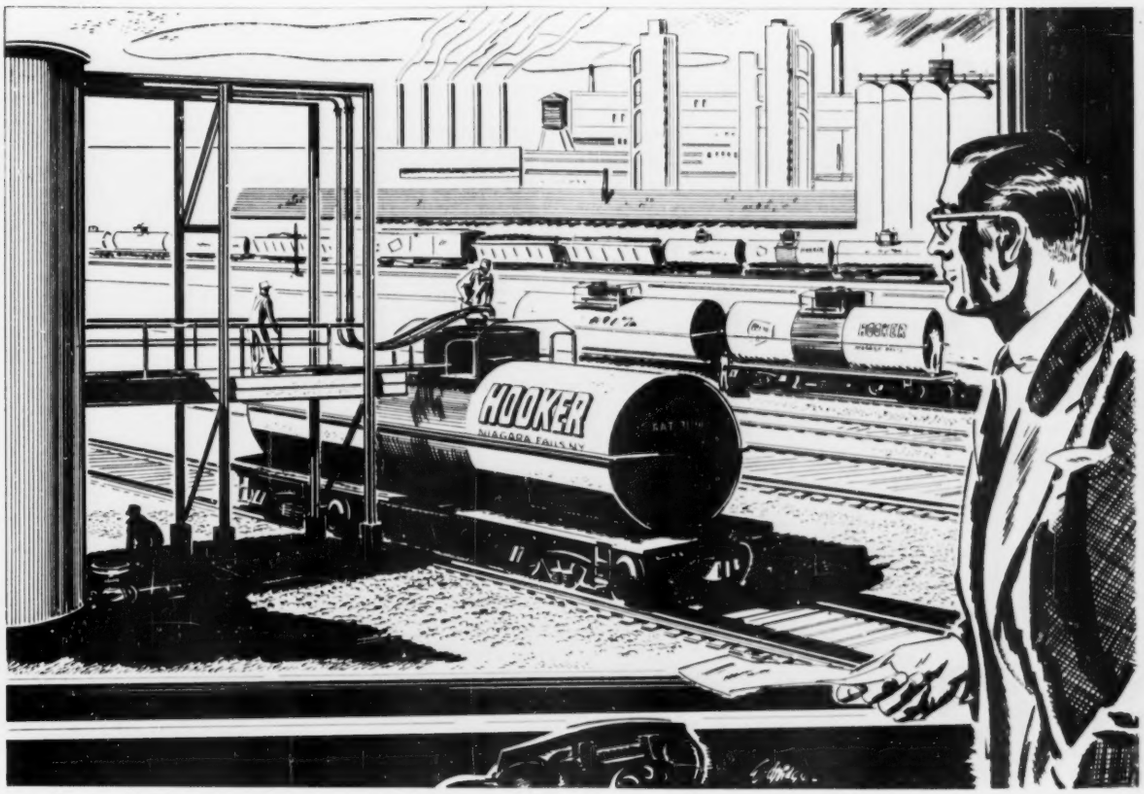
Brown stock is stored in a Stebbins Engineering 25-ton low density tile storage tank, equipped with an Impco high-density dilution system. Stock then goes through a DeZurik consistency regulator to four Trimbey screens, the first three operated in parallel as primary screens. Rejects go through a tailing screen. Rejects of this screen go to a 14-plate Impco flat screen, with .008-cut plates, while accepted stock is returned to the feed of the primary screens.

Pulp is thickened and bleached in equipment available in sufficient capacity before the new mill was constructed. It was necessary to add a 60-ton Stebbins-Semtile 36½ ft. high-density bleached storage and a 15-ton brown stock storage tank.

Recovery

Black liquor evaporation is by a sextuple effect Goslin-Birmingham evaporator, which has a split feed on the fifth and sixth effects, and a two-pass liquor feed on the first effect. Operation is controlled by Foxboro instruments. Temperatures at 20 different points throughout the system can be checked by means of a Foxboro Dynalog temperature indicator. The evaporator is designed to operate with 12 and 55 percent solids, and has a design capacity of 142,600 pph evaporation.

The liquor from the evaporator is pumped to the cascade evaporator section of the Combustion Engineering recovery boiler, where the solids are built up to



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KEY MEN IN MEAD EXPANSION

O. B. MASON (left), Division Mgr. of Chillicothe Div., The Mead Corp., under whose direction new pulp mill was built. He said efficient materials handling and straight-line flow were kept in mind.

CLARENCE GARRETT (right) Pulp Mill Superintendent of the Chillicothe Division. He and his staff expedited the start-up of the new mill.

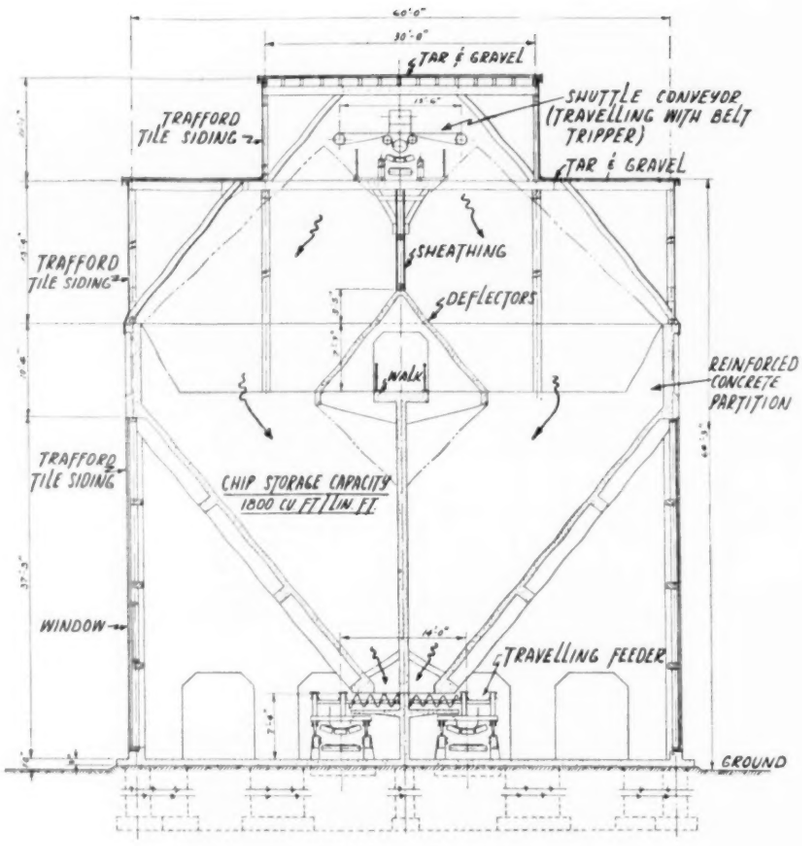
72-75 percent. Flue gases go through a Research Corp. electrostatic precipitator equipped with a wet bottom.

Liquor goes through primary and secondary heaters and into the furnace. The capacity of the boiler is rated at 525,000 lbs. of black liquor solids per 24 hours. About 1,710,000 lbs. of steam at 875 psi and 825° F are produced in 24 hours. The boiler is of the two drum bent tube type with pendant super heater, integral economizer and completely water cooled furnace. Foxboro instruments control the liquor system; Bailey instruments, the air, steam, and feed water.

Causticizing

The new causticizing equipment is an open-air operation.

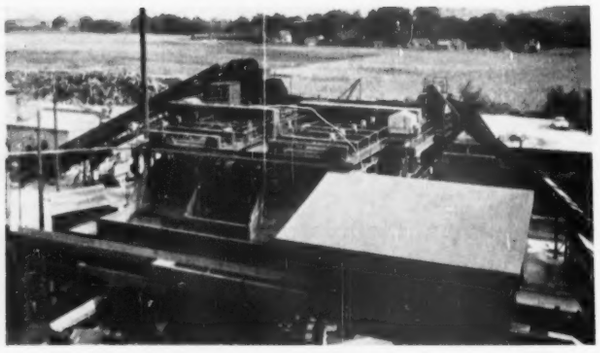
Continued on page 114



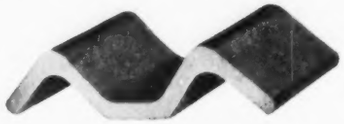
CHIPS FLOW FREELY AND EVENLY IN HURTER TYPE BIN

HERE IS DRAWING OF TYPICAL reinforced concrete and wood chip bin as designed by A. T. (FRED) HURTER, Consulting Engineer of Montreal and head of the Stadler, Hurter & Co. This is not a drawing of the Chillicothe 68 ft. high chip bin but shows many of the distinguishing features of that one and others. The Hurter bin was described in detail in an article by Mr. Hurter in the Dec. 1949 PULP & PAPER.

Bark Hard or Soft Woods up to 8′ in Length Wet . . . Dry . . . or Combined Dry and Wet With F.M.P. Welded M-Bar Barking Drums



2-M-BAR 12′ x 45′ BARKING DRUMS, THE MEAD CORP., CHILLICOTHE, O.



M-Bar—Hot Rolled

Exclusively used in F.M.P. drums. Welded and riveted to heavy ship channels.

134 barking drum sales since 1947. (108—12′ D. x 45′ L., 17—12′ D. x 67½′ L., 9 miscellaneous.)

Barking drums can be furnished with long or short column steel frames to fit customer's requirements. Drumshells shipped completely shop-assembled.

Built-up drumshells and steel frames fabricated at Birmingham, Chicago, and Greenville, Pa.

FIBRE MAKING PROCESSES, INC.

Manufacturers of Barking Drums since 1915, welded drumshells since 1933

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MULTIPORT VALVE

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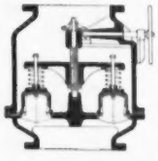
Designed for smooth, positive operation at all times, Cochrane Multiport Valves regulate line overpressure—keep back pressures within upper pressure-temperature limits... automatically!

No Freezing, Jamming, Sticking — **Multiple Discs** (3 to 16 per valve) eliminate valve failure.



No Blowdown, Vibration or Wasted Steam — **Vapor-Cushioned** valves ride with overpressure to iron-out fluctuations or pulsations . . . open s-l-o-w-l-y to bleed-off *only* excess pressure, ease closed to tight reseat *exactly at set* pressure.

Fully Adjustable — **Back Pressure Adjustment** at the turn of a wheel. Valve springs are adjustable from zero to the maximum initial relief pressure you specify. Valves can't be "gagged" or "locked-shut".

Precision machined from non-rust, corrosion-resistant materials to give long service under toughest wear conditions.

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I've seen them make board without a press . . . never without felts!

During the shortage in war times, when production was more important than costs, some mills ran the sheets direct from the wet end of the machines to the drier rolls without passing through a single press. The excess water had to be cooked out—and cooking is costly.

In these highly competitive times any mill would go broke if machines were not equipped with felts capable of removing most of the water through the open spaces between threads. The more water squeezed out by the press the less heat required to complete the drying. And, the larger the open spaces in the felt, the more water will be removed.

But unless the open spaces are well protected by the nap of the felt too many fibers will go through with the water. This explains why so many mill superintendents insist on having Hamilton Felts—to remove more water quicker and to filter out any fibers that may be captured in the long, thick nap.

From the 300 different styles of Hamilton Felts you will find one that will do your work better, faster and at lower cost.

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Miami Woolen Mills — Established 1858

Hamilton Felts

Here's the BRIGHT Idea

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Paper White RB

the colorless dye that gives the highest "optical" brightness to paper

Paper White RB has an exceptional ability to convert incident ultra-violet light to visible light which is *added* to the light reflected from the paper. From the ultimate reader's point of view, this enhanced reflectance produces an ocular sensation that can best be described as "whiter-than-white."

In any type of application . . . beater dyeing, surface coloring, dip-dyeing of light weight stock, or coating whites and pale tints . . . Paper White RB sets new standards of brilliance.

Also, where bleaching is uneven, Paper White RB will bring the paper up to a uniform high-whiteness simply by adding the proper amount.

Another feature is stability of shade of papers containing Paper White RB on storage in either acid, neutral or alkaline atmospheres.

Samples and technical assistance on the use of Paper White RB are available on request.

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"RIMMED STEEL" DIGESTERS AT CAMAS MILL

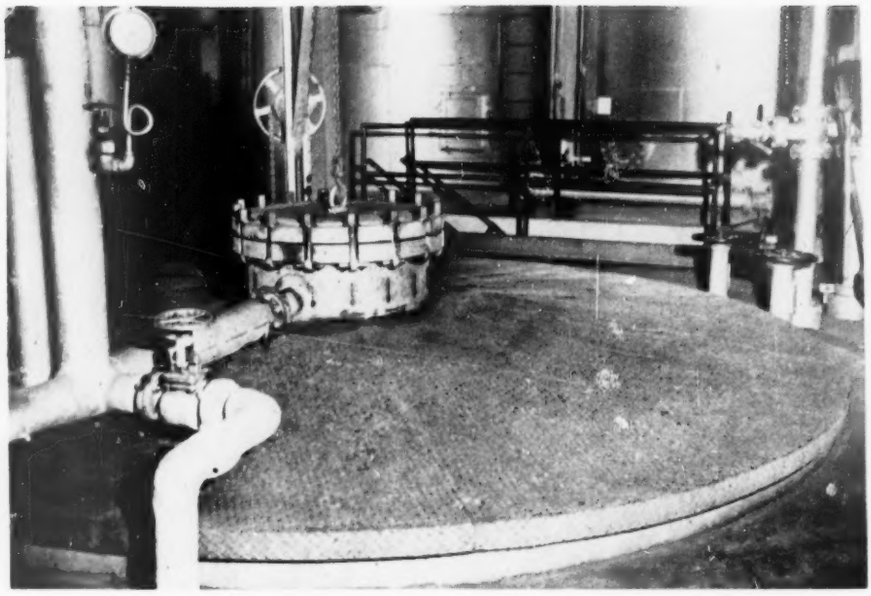
CROWN ZELLERBACH CORP., Camas, Wash., recently completed installations of stationary "rimmed steel" digesters to replace two of the plant's ten rotary digesters in the kraft pulp mill. The new units incorporate new features intended to hold corrosion to a minimum. Of particular significance is the fact that these two digesters are filled with liquor from the bottom rather than from the top.

A 6-year corrosion study carried on here indicates that kraft liquor splashing on digesterwalls accounts for considerable of the corrosive action, according to F. W. Flynn, assistant kraft pulp mill superintendent. Tests reveal that corrosive action in areas receiving practically no liquor splash are but one percent of that resulting in areas of maximum splash. Running liquor in at the bottom in place of from the top eliminates splash and consequently it is anticipated that corrosive action can be materially lessened.

Mr. Flynn points out that bottom filling eliminates the "hot plate" boiling action which takes place during top filling as result of splashing white liquor on hot digester walls (see his article in Dec. 1952 PULP & PAPER on the Camas studies).

Both of the new units are A. O. Smith Corp. rimmed steel digesters with 2 in. carbon steel shells of ASTM A-285 grade B modified firebox quality steel of 50,000 psi minimum tensile strength. They were fabricated, heat-treated for stress relief and X-rayed in place at the plant.

These digesters, each of 4100 cu. ft. volume, replace 1480 cu. ft. vessels. In changing from the rotaries to larger stationary digesters, it is believed, the pulp quality has been improved by longer and less intensive cooking.



A. O. SMITH CORP. stationary "rimmed steel" digester, one of two bottom liquor charging units replacing rotary digesters in Crown Zellerbach's Camas, Wash., kraft pulp mill.

MORDEN "SLUSH-MAKER" SERVES NO. 14

As another phase of Crown Zellerbach's continuous plant-product-process improvement program, new stock preparation facilities have been installed for No. 14 machine at the Camas, Wash. plant. This 91 in. Yankee machine produces facial and toilet tissue at rate of 25-30 tons per day.

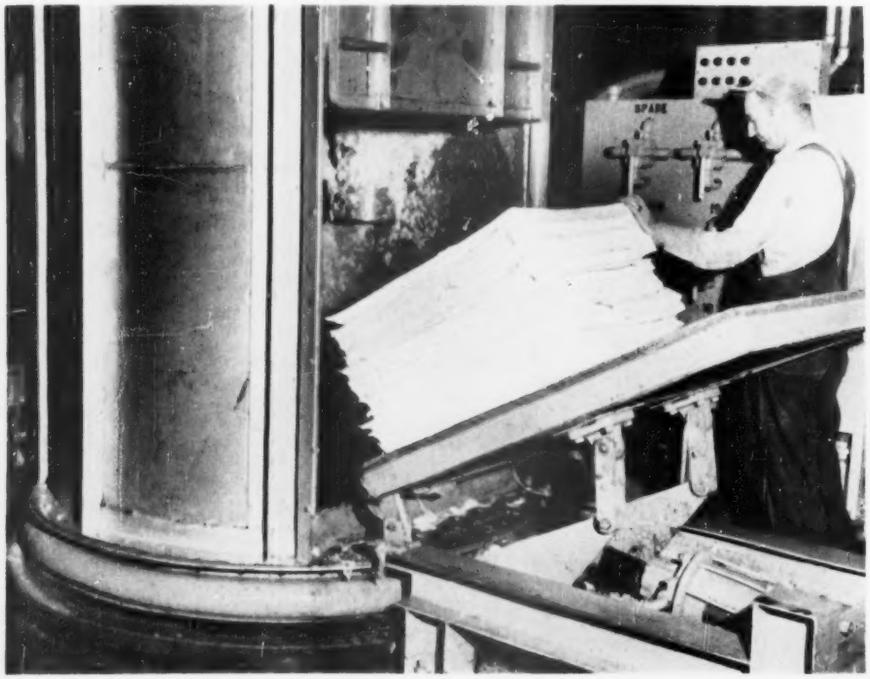
To provide more effective means of preparing stock for the machine than could be obtained from the beater previously used for the job, a Morden Machines Co. "Slush-Maker" has been installed for breaking, mixing and blending. The stock includes about 30 percent special bleach pulp in dry lap form and the remainder of special bleach pulp in slush and broke form. Specific quantities of dry lap feed into the "Slush-Maker" hopper via tilting hoist, and slush pulp discharges in desired ratio from hood-contained pipes which lead directly from the pulp mills. The charges, running 15 to 16 every eight hours, are finely mixed and blended, then pumped to a beater chest.

Two shaving pipes in the hood return trims from No. 14 machine directly to the stockmaker.

Although specifically purchased for its present use, this "Slush-Maker" of 1500-pound tank size (six per cent stock) underwent two weeks of testing after installation but before being finally hooked up to No. 14 machine. Test runs included broke and dry lap of wide variations—particularly to see what the machine would do with wet strength type. The trials, according to Ed Webberley, beater room superintendent, resulted in successfully repulping even the high wet strength broke.

Incidentally, the Camas mill furnished paper for and participated in the initial application of wet strength grades—back when the only "Slush-Maker" was a 200-lb. experimental unit.

FEEDING LAP PULP to Morden "Slush-Maker," new stock preparation unit of tissue-making No. 14 machine at CZ Camas mill.



A Chemical Industry Book

A new *Chemical Industries Facts Book*, recently published by the Mfg. Chemists Assn., is available, free on request. Write to Jeff Smith, Dow Chemical Co., 350 Sansome St., San Francisco, Calif., for copies.

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are increasing production capacity and operating efficiency!

Wherever pulp and paper is being made—from Alaska to Australia—you find ROSS Air Systems operating in nearly all departments of the mill. The constantly growing need for larger output in the face of steadily increasing costs for labor, fuel and maintenance have made ROSS Systems standard equipment in progressive mills everywhere to insure maximum operating efficiency and improved working conditions.

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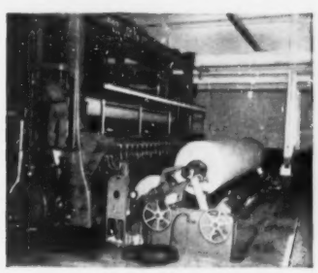
ROSS-HOOPER Totally Enclosed Hood



ROSS Calender Cooling

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Convert Your Saw Mill Waste from Ash to Cash

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BARKERS and SLAB CHIPPERS

If you have a 20,000 to 35,000 board foot saw mill, you cannot afford any longer to burn your waste. Soderhamn's new D-3 Barker and modern Slab Chipper can be installed in your mill for only $25,000. These performance proved machines will pay for themselves in less than a year and make clear profits for you from that time on.

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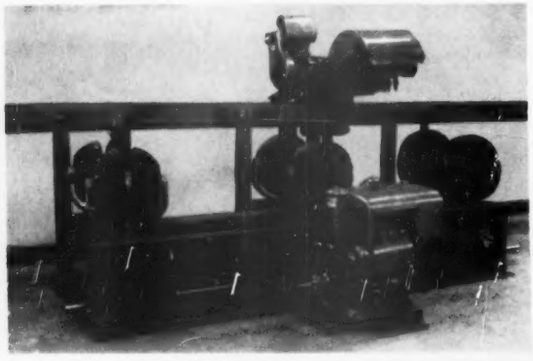


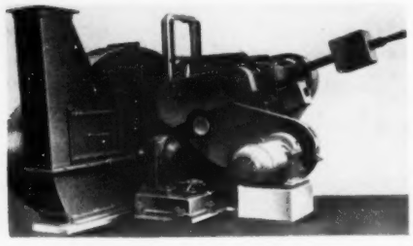
SODERHAMN D-3 BARKER

(Patent pending)

This new, low cost barker has a maximum feed speed of 40 linear feet per minute. Handles 10-foot lengths and up. Log diameter range 5" up to 36". Gasoline or 30 H.P. electric power. The barker is part of the conveying system and therefore can be installed without any additional conveyors.

SODERHAMN HF-30 SLAB CHIPPER

Note the exclusive field proved feedwork - a must to produce uniform chips from all kinds of saw mill waste. Producing 5 cords of chips per hour at 60 H.P.



For specifications and complete information about Soderhamn wood waste recovery equipment, including Barkers, Chippers, Chip Screens, Re-Chippers, and Swedish Gang Mill equipment, wire, phone or write

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CANADIAN REPRESENTATIVES: West Coast: Canadian Sumner Iron Works, Vancouver, B. C.; East Coast: Forano Limited, Montreal, Canada

SNAPPED BY PULP & PAPER at the big Forest Congress in Washington, D.C.: Left to right: GEORGE L. DRAKE, Vice Pres., Simpson Logging Co., and P. H. GLATFELTER, President, P. H. Glatfelter Co., who won two Conservation Awards; D. E. HESS, Woodlands Mgr. of Glatfelter Co., which was cited for good forest practices in Pennsylvania; ROBERT N. HOSKINS, Conservation Forester for Seaboard Air Lines, who made the awards for AFA; CHARLES SAGE, Vice Pres. of Kimberly-Clark and Chairman of Forest Industries Council which has issued a new policy statement in book form (see summary, page 75, Oct. issue, PULP & PAPER); B. KOONTZ, Wood Dealer, Jefferson, Tex., who presented Pres. Eisenhower with a polished cypress root; PAT HERR, Woodland Mgr., Brown Co.; and JAMES L. MADDEN, Pres. of Hollingsworth & Whitney Co., and retiring President of American Forest Products Industries, Inc.

Forest Service and Educators Defend Private Industry Against CIO Charges at Congress

SENSATIONAL CIO CHARGES were leveled at industry, incriminating also the U. S. Forest Service and educational institutions at the Fourth American Forest Congress sponsored by the American Forestry Association in Washington, D.C., Oct. 29-31.

CIO charges were: 1. That standards established for Forest Service statistics, notably the Timber Resources Review, are breaking down under pressures from large corporate interests. 2. That standards of contract enforcement in the Forest Service are breaking down under pressure from these interests. 3. That big lumber interests are opposing full productivity in timber, with a view to monopoly and scarcity prices. 4. That corporate interests are undermining independence of the forestry profession through contributions to schools of forestry while opposing appropriations for federal and state forestry operations. 5. That large-block cutting in Far West private timber and on public lands under pressure from private interests, is destroying the timber, soil, watersheds, water tables, wildlife resources and recreational opportunities. 6. That private industry's proposal to manage California redwood forests on a 75-year rotation basis can produce little but red powder. 7. That pulp and paper interests, particularly in the Appalachian National Forests, have refused to support appropriations to the Forest Service which were in public interest. 8. That the Tree Farm program is a smoke-screen to hide poor forest management by private industry.

The CIO charges were generally classified as "intemperate" and unworthy of answering. But answers did come—from the Forest Service and educators—to refute charges of pressure and influence from industry.

Emanuel Fritz, school of forestry, University of California, said: "The charge that corporate interests are endeavoring to undermine our forestry schools through endowments is not only ridiculous and false, but an insult to the schools' faculties. Never in my 35 years teaching has any industry attempted to exert influence on the schools or faculties. There was an attempt to control forestry schools in the late 1930s, but it was not by industry. It is an obligation of industry and individuals to contribute so that these independent schools can survive.

"Foresters on private payrolls are a particularly fine lot. They are honest, enthusiastic and technically competent."

John L. Gray, state extension forester for North Carolina, pointed to impetus given conservation in the Southeast by private industry, and distribution in North Carolina alone of 3,250,000 free seedlings from private nurseries.

Edward P. Cliff, assistant chief, U. S. Forest Service, said the CIO charges against industry were unjustified, and maligned the Forest Service. He said Forest Service contract enforcement was not perfect, but was good, and industry was cooperating. Any deficiencies were due not to pressures, but to the fact that field staffs could not handle all the work.

Ed Stamm, Crown Zellerbach Corp. vice president, said they had no apologies for forestry practices in the Far West. He was willing to show the CIO members on a personal tour how well they are working.

In a summary of the Congress, George A. Garratt, dean, school of forestry, Yale University, outlined three major goals:

1. To meet the essentials of forest protection.

2. To improve national timber crop in volume and quality to a degree sufficient to wipe out all deficits and build up a reserve.

3. To obtain maximum of economic and social services from our forests by realistic application of the principle of multiple use in their management.

This summarizes discussions and general opinions at the Congress:

MULTIPLE USE: Conflicts over land use lie at the root of all problems of American conservation. Population is at the point where our land resource, under present methods of use, is badly strained, but the potential productivity is still vastly greater than needs. The theory of multiple use assumes development of an ideal combination of uses, in which all tangible and intangible benefits of management are increased to the highest level consistent with sustained productivity. One of forestry's gravest challenges—perhaps its most glittering opportunity—lies in the problem of intelligent watershed management. Intelligent manipulation of vegetation can do much to control the quantity, distribution, and quality of stream flow. And this may be done at a profit.

FOREST LAND MANAGEMENT: The factor most responsible for the current trend in forest management has been widespread increase in stumpage prices, which, in terms of real dollars, illustrates a fundamental shift in supply and demand. In many situations, it is now cheaper to grow stumpage than to find it in the woods.

However, there are still signs that all is not well in the national woodshed. The present discord over the rate of harvesting reserves of old-growth timber on National Forests is an important symptom. We must promote cutting practices that will insure regeneration of desirable species, not merely any species. There is still wide latitude for improvements in harvesting, manufacture, and use.

FOREST PROTECTION: Substantial increases in the yield can yet be achieved by reducing the 10 percent annual toll of

damaging agencies. There should be more fire protection; increased stress on combatting insects and fungi.

Until recently, forest industries have drawn largely on virgin forests. Material of this size and quality is not a renewable resource. The transition from old-growth to second-growth forestry is painful for labor, management and the consumer. We must seek the type of integrated utilization which represents multiple use in timber production.

FOREST LAND OWNERSHIP: Divergent views expressed show forest land is in demand. The current controversy on ownership is a measure of the extent to which forest management and future planning have become a reality for major industrial forest owners. Nevertheless, statements by the Secretary of Agriculture and Assistant to the President indicated an administration policy which makes it unlikely we shall see important changes in the broad pattern of public and private ownership.

FORESTRY RESEARCH AND EDUCATION: The field of forest genetics should be especially fruitful for research, along with investigations of the ecological and physiological principles of forestry.

FOREST SURVEY: The Forest Survey is an indispensable tool for sound planning in both public and private endeavors. It was proposed that resurveys be frequent and intensive in the most productive forest lands.

PUBLIC EDUCATION: Teaching the public to regard growing trees as a crop is vital to public support of forestry practices.

EDUCATION AND ASSISTANCE FOR OWNERS OF SMALL FORESTS: Education of these owners should give them a realization that sound practices are feasible from standpoint of owners and essential to national welfare. Owners of small woodlots also need substantial technical assistance and private and public assistance should be coordinated.

PROFESSIONAL EDUCATION: The time seems ripe for a reappraisal of basic objectives in education, to deal with problems of specialization, sub-professional training, graduate instruction and general education.

CONCLUSION: Efforts should be directed toward giving forest lands a permanent and increasing role in an economy of abundance. This economy relates both to material products and to non-material values. No one scheme or pattern can apply to the industry as a whole, over the country as a whole.

Consolidation Still Possible

Consolidation of the Bureau of Land Management, in the Department of Interior, and the U. S. Forest Service, in Agriculture, is still possible, Sherman Adams, assistant to the President, indicated to the Forest Congress. Mr. Adams indicated the logic of consolidation, and that it was being considered, in spite of the political dynamite with which such a move has always been associated.

1952 U.S. Cut of Pulpwood

Ownership	*Commercial Forest Area—M Acres*	*Estimated Cut—M Cords*	*Average Cut Per M Acres—In Cords*
Pulp Industry	27,823	4,622[1]	166.0[1]
State Lands	21,856	290[2]	13.3
National Forest Lands	73,543	822[3]	1.1
Other Lands	377,230	19,229	51.1
TOTAL ALL OWNERSHIP	460,452	25,065[4]	54.5
Estimated Requirements, 1975	(460,452)	40,000[5]	86.0

Sources: [1]American Pulpwood Association; [2]State Departments (incomplete); [3]U. S. Forest Service; [4]Bureau of Census; [5]Paley Report.
Note: Average cut per 1,000 acres—166 cords by pulp and paper industry; only 1.1 cords by national forests; 13.3 cords by states.

Public Forests Should Cut More Pulpwood

By W. S. Bromley

Executive Secretary, American Pulpwood Association

(Statement Made at American Forest Congress, Oct. 29, Wash., D. C.)

Pulpwood is getting insufficient attention in the management of most public forests today. It accounts for 14 percent of the annual consumption of forest products in this country. In analyzing the 1952 cut of domestic pulpwood, the American Pulpwood Assn. has found that public forest management policies and plans frequently have inadequate or no provision for the cutting of pulpwood. Statistics on this study will be made available to this Congress.

1. The pulp and paper industry owns only 6 percent of commercial forest land area, but developed 18.5 percent of the pulpwood. This cut represented only half the present growth on these lands.

2. The state forest lands which represent 5 percent of commercial forest land area, produced 1.1 percent of the pulpwood we needed last year. Much of this land is in stages that do not permit cutting but the growth of pulpwood is probably 10 to 20 times the present cut.

3. The National Forests, with 16 percent of our commercial forest land, produced 3.3 percent of our consumption of pulpwood. Provision for an allowable cut of pulpwood has been made in only three out of 9 forest regions. A large portion of this forest lies in the West where it is not accessible economically to any pulp mill. From the 73.5 million acres of National Forests, we should be able to look forward to a future allowable cut of at least 10 million cords of pulpwood.

These ownerships I have mentioned should be the leaders in their respective ownership classes in providing pulpwood. The pulp and paper industry has admittedly a more vital interest in pulpwood, and we can expect it to retain its leadership in growing and harvesting pulpwood.

National Forests and state forests can also assume more leadership if the administrators consider pulpwood in their management policies in areas accessible to markets to the following extent: (1) Making specific provisions for cutting of pulpwood as improvement, thinning, and salvage operations in annual policies and plans; (2) Providing in proposed sales and marked areas for sufficient volume cuts of pulpwood to make it practical and economical for the logging operator; (3) Establishing minimum stumpage value limits low enough to be certain bona fide operators will bid on sales; (4) Laying out a reasonable distribution of pulpwood sale area sizes to provide for large as well as small logging operations—the large sales should have sufficient volume to justify building of camps, main roads, etc.; (5) Encouraging sales of pulpwood to the point that they equal the allowable cut for each unit.

Economic studies predict the demand for pulpwood is likely to increase more than that of any other forest product during the next generation. In the face of such predictions, it is not enough just to provide for fuller recognition of pulpwood in the management of large public and private forests. The small private forest and farm woodlot owners will also profit by considering pulpwood as a crop.

In most regions, two to three crops of pulpwood can be grown while one crop of sawlogs is grown. How many foresters know for sure which rotation will produce the greatest national benefits, the most employment, the highest rate of return per dollar invested?

Our foresters still have a long way to go in fully integrating the growing of pulpwood with the growing of sawlogs and other forest products.

Pulpwood Consumption

Consumption of pulpwood in U. S. mills in the first half of 1953 was at the highest level in history, totalling over 14 million cords and registering an increase of 4.2 and 6.4 percent, respectively, over the same periods of 1952 and 1951. Supplies continue adequate with no problems anticipated for the ensuing several months. National inventories are down nearly 4 percent below a year ago.

100-Page Daily

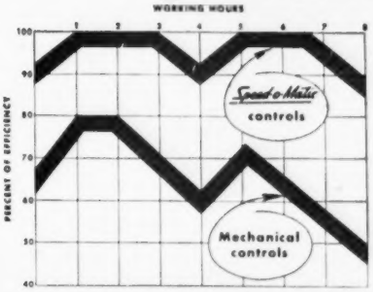
The Chicago Tribune for Oct. 15 consisted of 100 pages, the largest regular weekday edition ever published. It contained more than 230,000 lines of advertising.

Before you buy:

LOOK 'EM OVER!

This K-375 with 60 ft. boom and Independent Rapid Boom Hoist unloads incoming wood, stockpiles, and feeds conveyors.

No other rig has *Speed-o-Matic* power-driven hydraulic controls!



Speed-o-Matic controls, with their fingertip operated levers, are responsible for the above startling evidence of how operator fatigue can be reduced.

SPEED-O-MATIC controls not only reduce operator fatigue. They reduce wear and tear on the crane itself . . . require far less servicing than rigs with air, vacuum, manual or other control systems.

At the mill or in the woodlands Link-Belt Speeder's Speed-o-Matic controls provide fast, safe, positive, "feel the load" response . . . speed pulpwood handling . . . are fully operative with any front-end attachment.

For details on the complete line of crawler, truck and wheel-mounted shovel-cranes . . . all their matchless work-speeding, cost-cutting advantages, ask your distributor or write for Catalog 2373.

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BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

FACTORY-TRAINED DISTRIBUTOR SALES AND SERVICE SPECIALISTS ...EVERYWHERE

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Schield Bantam Puts Out New Type of Bulletin

An unusual new product information bulletin is issued by the Schield Bantam Co. of Waverly, Iowa in the form of a four page newspaper called the *Bantam City Press*. The new bulletin features stories, pictures, and specifications concerning Schield Bantam's new ¾ yard 5 ton Crawler Model C-35 as well as specifications and pictures of Bantam's all-new specially designed crane carrier, built specifically for mounting of the new Model T-35 truck-mounted Bantam.

Included are coupons, offering valuable services. These may be sent to the nearest Schield Bantam Distributor or directly to the factory at Waverly, Ia., where copies of the bulletin may be obtained.

Industry News in Brief

JACK J. ARNOLD heads a syndicate which has bought the Harrisville, N. Y., mill from St. Regis Paper Co., the latter retaining 25 percent common stock and will assist in expansion of this 70 ton specialty paper and groundwood mill. Bagley & Sewall will provide new equipment which was not specified.

SCOTT PAPER CO. starts up its big record-size tissue machine, expected to set new records, this month at Everett, Wash.

ANGLO-CANADIAN Pulp & Paper Mills Ltd. has taken a one-year option on 2,000 sq. mi. of timber in Saskatchewan, 50 miles northeast of Prince Albert. It may lead to a pulp mill there.

STRATHMORE PAPER CO. has bought Keith Paper Co., Turner Falls, Mass. F. Nelson Bridgham is new president; C. M. Bryan, vice president, and K. A. Sheridan, mill manager.

HERCULES POWDER CO., Hopewell, Va., received a certificate of necessity for tax writ for $7,000,000 for possible woodpulp manufacturing expansion.

SUTHERLAND PAPER CO. plans a new converting plant in Portage, Mich.

PERSONAL PRODUCTS CORP., Milltown, N. J., important user of high quality woodpulps, will expand to the West Coast with a plant to make Modess and tissues at Sunnyvale, Calif.

BERGSTROM PAPER CO. employes voted 2 to 1 to reject representation by the AFL Paper Makers union.

CONTINENTAL CAN CO. is building a $1,000,000 plant at Calgary, Alta, to manufacture paper containers from British Columbia pulp.

CORNWALL DIVISION of Howard Smith Paper Mills, Cornwall, Ont., is building a three story stock preparation structure to house equipment for No. 3 and No. 4 machines.

ST. LAWRENCE CORP. is installing at its Red Rock, Ont., mill the fastest kraft-paper making machine in Canada, with a capacity of 600 tons per day.

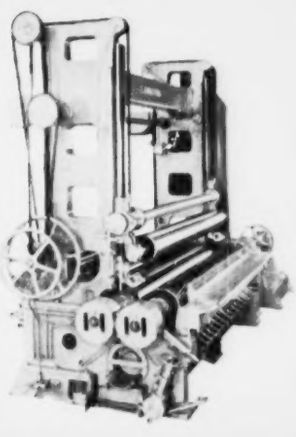
A REMOVABLE TYPE Fourdrinier has been installed by Canadian Vickers at Cornwall mill of Howard Smith Paper Mills on a machine said to be the fastest producing fine papers in Canada.

Port Edwards Ponds Sulfite Waste Liquor

Following a six-months test of lagooning spent sulfite liquor to reduce stream pollution, the Port Edwards, Wis., Mill of Nekoosa-Edwards Paper Co. has placed in operation a large new pond for liquor disposal.

Quantities of oxygen dissolved in the river water showed an important improvement after two test lagoons on an island in Wisconsin River began to operate. Scientists attributed this betterment to soil bacteria, which they believe consumed much of the wood sugar in the liquor before it found its way into the stream.

LANGSTON
SLITTERS
AND
WINDERS



Wherever paper is processed; Mill, Finishing Room or Converting Plant— Langston Slitters & Winders give dependable, trouble-free service.

Samuel M. Langston
Company
CAMDEN 4, NEW JERSEY

Personals

MIDWEST NOTES

THOMAS WARK, St. Cloud, Minn., many years manager of Sartell and Little Falls paper mills, in recent years operated by St. Regis Paper Co., has retired. Mr. Wark worked in the paper industry for 62 years and obtained experience in 23 paper mills before appointed superintendent. Succeeding Mr. Wark as manager of the St. Regis Paper Co., mill at Sartell, is *WILLIAM WOODWARD*, who has been managing the Hennepin Paper Co., mill at Little Falls. It was at the Sartell where Mr. Woodward started in the industry in 1933.

GEORGE LYDICK, Beckett Paper Co., Hamilton, O., has been elected chairman of the Miami Valley Div., of the Superintendent Assn. Other officers elected are: D. W. Newell, Phil Carey Co., first vice chairman; Robert O. Stephenson, Champion, second vice chairman; and Tom Friederich, Beckett, secretary.

EDWARD E. DEN DOOVEN, Green Bay Wis., has been appointed manager of Marathon Corp.'s Northern Paper Mills at Green Bay, backed by 26 years experience in the paper industry, Mr. Den Dooven will coordinate activities to integrate Northern manufacturing operations into those of Marathon.

COLA G. PARKER, chairman of the board for Kimberly-Clark, directed a panel discussion on "The Second Decade of Atomic Energy" at the second annual conference of the National Industrial Conference recently held in New York City.

ROBERT J. MCDADE, industrial relations manager of Crystal Tissue Co., Middletown, O., served as master of ceremonies at a Service Award program held recently by the company. *JOHN HALL* and *JOSEPH L. TYLER*, both retired employes, received 35-year emblems.

JAMES ROSE, Nekoosa-Edwards Paper Co., has been promoted to the sales dept., as consumer sales representative. *DONALD LICHTY* was appointed controller. Also at Nekoosa-Edwards, *VERNON IVERSON*, graduate of Luther College and U. of Oklahoma, was named technical control supervisor. Nekoosa mill, and *EDWARD NISSEN* took over Mr. Iverson's former work as development supervisor in the central lab. Ed is a Syracuse graduate.

PAUL NEVEAU has been appointed to the newly created post of safety director at Charmin Paper Mills, Green Bay, Wis. (ex-Hoberg). He came from a Kewanee, Wis., manufacturing plant.

THESE MEN MADE GREAT LAKES NEWS

DONALD A. ELERT (left), of Elm Grove, Wis., has been appointed Sales Representative for The William Powell Co., Cincinnati, manufacturers of precision valves, according to President James Coombe of that company. As part of a sales expansion program, Mr. Elert, formerly known in pulp and paper as a rep. of Maxwell, Manning & Moore, will serve the industry in Minnesota, Wisconsin and North Michigan.

CAPT. ELMER L. CARLSON (right), of Chicago, retired Navy veteran of two wars, has been elected Treasurer and Financial Adviser of Green Bay Paper & Pulp Co., and Green Bay Box Co., of Green Bay, Wis., according to Pres. George Kress, who heads both companies. Capt. Carlson has been connected with several Chicago banks and was Asst. Vice Pres. of Foreman-State-National Bank.

FRANK A. PESCHL has been appointed director of engineering of Olin Industries, Inc.

JAMES D. WEBER has been appointed sales application engineer in the Detroit district sales office of Reliance Electric and Engineering Co.

LEO J. MEYER has been promoted to supervisor of material standards in the technical department of Gardner Board and Carton Co., and *MARK KELLY* has been promoted to staff assistant to the superintendent of the Middletown carton plant. Also recently promoted was *JOSEPH W. SORRELL* to tour foreman at Mill II.

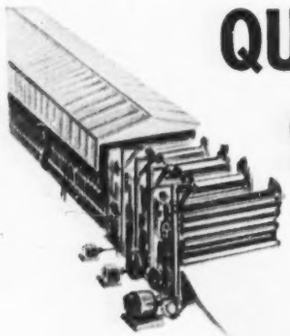
HARRY G. POUNSFORD, nearing his 89th birthday, has just completed 60 consecutive years as a director of Champion Paper & Fibre Co. and its predecessor, Champion Coated Paper Co. He was one of the original signers of the document incorporating this company.

AUSTRALIA NOTES

G. W. ELLIS, 30 years with Australian Paper Mfrs. Ltd., has resigned to be director and general manager of Wiggins Teape and William Nash, Ltd., whose subsidiary Stonehaven Mills is building a fine paper mill near Nowra, N.S.W.

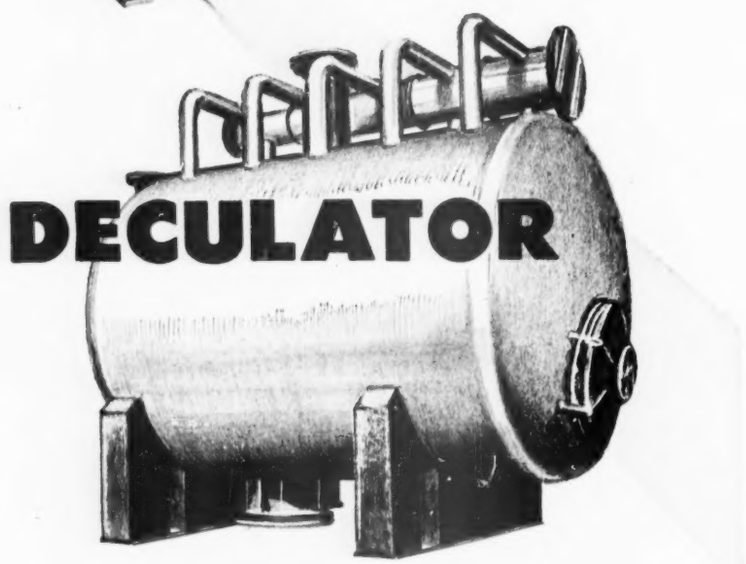
SIR JAMES FLETCHER, chairman of Tasman Pulp & Paper Co., whose $42,000,000 newsprint mill is now under construction at Te Teko, New Zealand, passed through Vancouver, B.C., after a business trip to Europe. He announced the assistant mill manager is *J. P. TURNER*, formerly of the Harmac mill of MacMillan & Bloedel.

I. ALEXANDER, formerly of Maxwell Porter & Co. in Sydney, N.S.W., has joined the staff of Australian Paper Mfrs. Ltd. as assistant to the general sales manager. *R. W. WILLIAMSON* has returned from overseas and is now assistant board mill superintendent at A.P.M.'s Fairfield mill. An Australian recently awarded a fellowship at the Institute of Paper Chemistry, Appleton, Wis., is *J. W. T. MEREWETHER*, who will spend the next eight months there.



QUALITY.. from STOCK to FINISH

is assured with the



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Improved quality of the finished sheet is just one of the results of what the Deculator does to the headbox furnish. This alone makes the Deculator a profitable investment. But there are other advantages, too. We'd like to tell you about all of them.

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PRODUCTS

for the paper mill,
for the powerhouse

TYPICAL PAGES

This new 6-page bulletin contains quick-reference data on the wide range line of De Laval products for the paper industry. You will find in its pages "capsule" information on such efficient De Laval equipment as:

- **Process, stock, white water liquor and general service pumps**
- **Single and double reduction speed reducers**
- **Mechanical drive turbines**
- **Turbine generators**
- **Boiler feed pumps**
- **IMO fuel oil and transfer pumps**

Flow diagrams show exactly where each type of unit fits into the paper mill *and* the powerhouse.

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of new Bulletin 100.

DE LAVAL *Products for the Paper Industry*

DE LAVAL STEAM TURBINE COMPANY
813 Nottingham Way, Trenton 2, New Jersey

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Personals

SOUTHERN NOTES

WILLIAM C. BARNWELL, former assistant power plant supt., Gaylord Container Corp., has moved up to assistant chief engineer under Chief B. B. Pierce. Mr. Barnwell succeeds *EDWARD L. COWAN*, who has gone to Calhoun, Tenn., to be chief engineer of the Bowaters Southern Paper Corp., coming into production in April (see picture and story elsewhere in this issue). Mr. Barnwell and Mr. Cowan both graduated from Mississippi State in 1930.

B. W. HASKELL has been appointed resident engineer of Fernandina, Fla., division of Rayonier Inc. Born in Savannah, he graduated from Georgia Tech in mechanical engineering in 1942 and joined Rayonier in 1946 after serving with General Electric and during W. W. 2 in Europe, as captain of U. S. Army Ordnance.

WILLIAM C. RINDSLAND has been appointed resident engineer of the new Rayonier mill being built at Jesup, Ga. He was former resident engineer at Fernandina, since Aug. 1952. He was a former engineering prof at his alma mater, U. of Minnesota, commanded an Engineer Combat Battalion in Europe during the war and ended up as lieutenant colonel. Res. Mgr. *TOM STEIN* at Jesup is also an ex-Minnesotan.

DON HODGE has been named executive assistant to Crossett Paper Mills sales manager. He has been with Crossett 11 years, recently as sales-manufacturing department manager.

ROBERT P. DOUGHERTY, who came from Little Rock, Ark., is new assistant personnel director under *R. P. MEREDITH* for the Crossett Companies at Crossett, Ark.

T. T. DUNN, vice president and resident manager, Union Bag and Paper, Savannah, has been named to the Savannah District Authority by Chatham county commissioners.

SIDNEY R. BROWN, JR., is the only 15-year veteran at the Big Island plant of National Container Corp. He is paper mill superintendent at Big Island, has a brother representing H. Waterbury & Sons in Savannah, and his father, *SIDNEY R. BROWN, SR.*, is a retired veteran of the industry from North Carolina Pulp Co.

THEY MAKE NEWS IN THE SOUTH

T. J. (JOE) BURNS (left), has opened a new Southern Office for Beloit Iron Works as its Sales and Service Rep. at 1508 Atlanta Federal Savings Building, Atlanta, Ga. (phone is Lamar 7486). Joe, 14 years in various Beloit departments, was Erection Engineer for seven years installing some of the recent machines they have built in various mills. JAMES E. AYER (right), former Engineer with West Va. Pulp & Paper, is new Acting Head of a revitalized Department of Pulp and Paper Technology at University of Alabama, University, Ala. Eight students enrolled this year in preparatory courses. Gulf States Paper Corp. has given a $35,000 annual grant.

NORTHEAST NOTES

UNIVERSITY OF MAINE has lured many industry men to lecture at its classes at Orono. Included recently were *W. C. STEVENS*, sulfite superintendent, International Paper Co., Chisholm, Me.; *I. H. WHITE*, superintendent, groundwood division, Keyes Fibre Co., Waterville, Me.; and *FLOYD M. CROCKER*, woodlands manager, St. Regis Paper Co., Bucksport, Me.

CLAUDE P. ELSTON, 66, retired advertising manager of West Virginia Pulp & Paper Co., died at his Greenwich, Conn., home, in October. Mr. Elston joined West Virginia in 1904 in sales. He is best remembered for the publication, "*Westvaco Inspirations for Printers.*"

DANIEL WEBSTER MARSHALL, 83, master mechanic at Groveton Papers Co., Groveton, N. H., for 52 years, passed away at the home of his son, *D. WEEKS MARSHALL*, in October. The elder Marshall entered the industry with Kimberly-Clark before moving East and starting with Groveton. His career was so long at Groveton, that he was in charge of all construction from the beginning of the mill through its latest expansion—and was said to have built the whole mill from the ground up. His son is also with Groveton Papers.

F. S. LEINBACH, secretary and assistant general sales manager, Riegel Paper Corp., has been elected president of the Packaging Institute.

International Paper Co. has consolidated two major sales units into a Fine Paper and Bleached Board Division to be headed by *LAMAR M. FEARING*, sales manager. Sales assistants will include *PAUL A. MAHONEY*, *JOHN H. GOODWIN*, and *WALLACE K. GRAVES*.

PACIFIC COAST NOTES

ANDREW ERICKSON, son of *EINAR W. ERICKSON*, assistant vice president in charge of manufacturing in San Francisco for Crown Zellerbach, is attending Stanford University but last summer worked at the Port Angeles mill where his father was former manager.

MILTON INGERSOLL is purchasing agent at the St. Regis pulp and paper mill in Tacoma, Wash. Recent news of *JACK LAMB'S* promotion to resident manager here failed to add the news that his former assistant p.a., Mr. Ingersoll, moved up into Jack's long-held position.

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Modern Facilities

Specializing in the Fabrication of Stainless Steel, Copper, Nickel and Copper-Nickel Alloys for Industry.

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FOR BUCKMAN AND HUYCK IN WEST

TWO MORE STARS of Pacific Coast Supply Co. staff, which is being closed up Jan. 1, have landed key positions as Pacific Coast Representatives:
HUGH GARDNER (left), will be Buckman Laboratories (Memphis) full-time Coast Technician, working out of his home at 1007 N.E. Eugene St., Portland, Ore., covering all Coast states and British Columbia. With Pacific Coast Supply, he specialized in Buckman slime control chemicals service for the past three years.
ROY W. KELLER (right), named West Coast Sales Rep. for F. C. Huyck & Sons, Rensselaer, N. Y., papermakers felts and jackets. He has been San Francisco Mgr. for Pacific Coast Supply, and therefore had long association with Huyck, which that company represented. He was in the Coast industry since 1939, leaving the Camas mill to join P.C.C. in 1947. He will move to Portland, Ore.

CHUCK NORDSTROM, personnel and safety director at Everett Pulp & Paper Co. these days is in an office right in the mill—having moved there from the main office. Chuck joined this Simpson Logging Co. mill from Crown Zellerbach, Port Angeles, over a year ago.

DAVID J. GALEN, veteran former vice president in charge of purchasing for Crown Zellerbach, was honored by a company luncheon and a 45-year service pin from the hand of Exec. Vice Pres. *HAROLD ZELLERBACH* recently in San Francisco. Mr. Galen has retired and, as previously announced, *JOHN M. FULTON* of Portland, Ore., succeeds him as top purchasing executive of the company.

S. V. V. HOFFMAN has been named west coast manager of the Raybestos-Manhattan, Inc. firm, succeeding Littleton Barkley, deceased. Mr. Hoffman will make his headquarters at the Los Angeles office of the firm: 4651 Pacific Blvd.

CECIL TAYLOR, recently appointed general superintendent of Columbia River Paper Mills, Vancouver, Wash., and former general superintendent at Wausau Paper Mills, Brokaw, Wis., now resides at 646 N. E. Hazelfern Place, Portland, Ore.

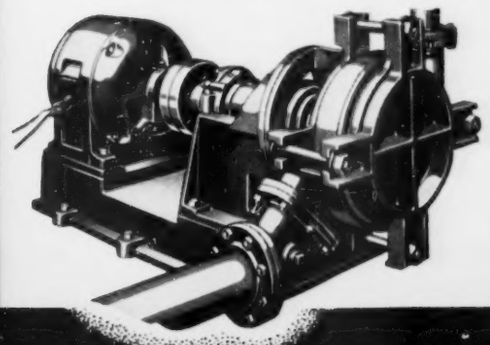
WHITNEY B. SANDERS, tax executive and assistant treasurer of Crown Z, San Francisco, Cal., has been elected national vice president of Tax Executive Institute.

HARRY L. DEITS, CZ senior engineer, Port Townsend, Wash., served as general supervisor of crews working voluntarily to clear part of the local military reservation for use as scenic historical state park.

H. B. REILLY has been appointed technical superintendent, San Joaquin Division, Fibreboard Products, Inc. He holds a degree in chemical engineering from Stanford and served with Crown Zellerbach, Champion, and Weyerhaeuser Timber Co. He had been a private consultant in Eugene, Ore.

LESTER E. REMMERS, 60, resident manager, Crown Zellerbach Corp., converting plant, Los Angeles, died recently following a heart attack. He started as office boy with Cupples Paper Co., and in 1927 joined Crown Willamette Paper Co.'s southern California Division in Los Angeles, as sales manager of wrapping paper and bags. In 1944 he was promoted to manager.

Makes GREAT RECORD
in handling
BLACK LIQUOR!



MORRIS
TYPE "R" SLURRY PUMP

Here's why the durable Type "R" provides longer service and requires minimum maintenance in handling black liquor!

- **Heavier wear-resisting parts—designed for exceptionally long life.**
- **No internal studs or bolts—caustic liquors cannot seep past threads and cause maintenance headaches.**
- **Low pressure stuffing box—since the gland is under suction pressure only, most packing troubles are eliminated.**
- **Suction disc liner—to minimize wear, an extra-heavy liner is provided between the suction disc and impeller.**
- **Interchangeable parts—pump parts of different alloys may be substituted to compensate for changes in the corrosive or abrasive action of the materials handled.**
- **Fewer wearing parts.**

In addition, Morris Type "R" is so easy to put on this rigorous kind of job. It fits into an existing piping layout just about as readily as in a new system — because its suction and discharge nozzles can swivel to 72 possible positions. It's so simple to dismantle, too — its impeller can be removed without disturbing piping or bearings. And the shell is interchangeable for left- or right-hand rotation.

Specify MORRIS TYPE "R" SLURRY PUMP { *For maintained high output . . .* / *For fewer shutdowns . . .* / *For less repairs . . .*

Write for literature on this advanced-design Black Liquor pump.

MORRIS MACHINE WORKS
Baldwinsville, N. Y. Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

ESCO High Alloy Castings

RESIST CORROSION

ALL THE WAY THROUGH!

Preparing centrifuge rotor castings for ZYGLO black light examination.

X-Ray inspection makes sure ESCO Castings for corrosion service are free of internal or hidden flaws.

Advanced gamma ray inspection, using Cobalt 60 Capsule and photographic plates.

ESCO ADVANCED NON-DESTRUCTIVE INSPECTION ASSURES UNIFORMLY SOUND CASTINGS

Of utmost importance in extreme corrosion service are castings that are sound *all the way through!* To make certain you receive only the highest quality alloy castings that can be produced, *ESCO* employs closely controlled scientific techniques for non-destructive inspection and testing. This is only one of the many reasons why an *ESCO* high alloy casting in your worst corrosion trouble spot will outlast others *many times over!*

ESCO metallurgical engineers work with more than 40 different high alloy steels every day... making pioneering contributions to the art of producing castings of unsurpassed corrosion resistance.

ESCO will be glad to recommend the *right* high alloy casting to combat *your* particular corrosion trouble. Whether you need one casting or an entire installation, your inquiry will receive prompt attention.

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Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York, New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Medford, Oregon; Salt Lake City, Utah. In Canada: Vancouver, B. C., and Toronto, Ontario.

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POSITIONS OPEN—MEN WANTED

We have positions right now for managers, supts., asst. supts., foremen for all depts., chemists, master mechanics, plant engineers, etc.

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For paper mills, pulp mills and paper converting plants. Serving employers seeking executives and executives seeking positions. WE WELCOME YOUR INQUIRIES.

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294 Washington St. Boston 8, Mass.

CONVERTER OR BOX PLANT

Cylinder machine mill in Middle West is interested in making arrangement with converter or box plant who wants a permanent mill connection on box board, coated or uncoated, or other cylinder machine products. Reply Box 163, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

WANTED: Pulpwood Grinders with or without electric motors. When offering, give complete information and specifications including manufacturer's name and serial numbers. Write Box 164, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

Mead Chillicothe Expansion

Continued from page 98

Green liquor from the recovery boiler is metered and heated and fed into the Dorr slaker and classifier by a Foxboro flow controller. Lime, unloaded to storage by a Fuller Airveyor system, is continuously fed to the Dorr slaker by a Merrick Feedoweight. Liquor from the slaker flows to three Dorr causticizing tanks, then to Dorr white liquor clarifier. Separated lime mud goes to the mud washer where any remaining caustic is recovered and to an Oliver filter on the brown stock washing floor for final washing.

Added Power Capacity

To satisfy increased electric power requirements of the new mill, a 7500 kw General Electric mixed pressure extraction condensing turbine was installed. The turbine is direct connected to a 9,375 KVA 3-phase 60 cycle 13,800 v 3,600 rpm generator with direct connected exciter. The turbine exhausts to a Ross two pass surface condenser.

When a new coal fired boiler now under construction goes into service to supply additional 875 psi steam, the new turbine will be operated without any change as a double automatic extraction unit supplying 400 psi steam to older low pressure turbines and 30 psi steam to process.

The General Electric 7500 kw .8 Pf turbo-generator set generates power at 13,800 volts for transmission to the new pulp mill. Power is delivered to the 13,800 volt bus through a G.E. 1200 amp, 500,000 I C air circuit breaker and then to the new pulp mill through similar G.E. breakers to three G.E. 1500 KVA, 13,800-550 volt substations.

Because of heavy instrumentation and automatic control of the new pulp mill, increased air compression equipment was required. Two Ingersoll-Rand 9 by 9 air compressors were installed.

F. C. Huyck & Sons
Leading Paper Maker's Felt Manufacturers of Rensselaer, N. Y.

IS ENLARGING ITS FIELD SERVICE ENGINEERING STAFF

A West Coast resident opportunity is open for a properly qualified engineer.

After training program, work will consist of varied liaison activities between paper mill customers on the West Coast and our manufacturing plant.

Age range desired 25-35. Attractive salary. Traveling expenses paid. Retirement, Health and Profit Sharing Trust Plans.

Write Director of Industrial Relations, sending full resume of background, experience and training. All replies held in strictest confidence.

WANTED: Manager for Paper Distributor in Far East. We have an opportunity for a capable paper man with some experience in handling finances. No foreign language necessary. Must be single. Preference will be given to person who has traveled or lived in Far East. Give full details of experience and personal history to Box 166, PULP & PAPER, 370 Lexington Ave., New York 17, New York

EXPERIENCED PULP MILL FOREMAN seeks position in pulp mill or equipment company. Have had several years experience as assistant superintendent, plus 12 years in other capacities. Can supervise and operate any department or equipment including bleach plant. Would like position offering advancement upon proven ability. References. College education. Box 165, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

WANTED: Single or duplex head ream cutter for tissue papers suitable to accommodate and cut sheets 126" wide from 24 rolls at one time. Back stands are desired but not required. When quoting, give complete information and specifications including manufacturer's name and serial number. Reply Box 161, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

BUSINESS OPPORTUNITY. Financial backing wanted, active, paper mfg., converting or jobbing experience preferred, for starting specialized bag plant. I have the bag mfg. technique, plus years practical & supervisory paper converting know-how. Box 168, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

WANTED: 2 Synchronous motors, 1000 to 1500 HP, 300 RPM, for 4160 volt, 3 phase, 60 cycle, AC. When offering, include complete nameplate data including serial numbers. Write Box 162, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

FOR SALE: "Cameron 6" Standard Rewinder. Located on West Coast. Width 42 Inches. Price $1,650.00. Reply to Box 167, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

Mead's Earnings

Earnings of The Mead Corp. for 16 weeks ended Oct. 4, amounted to $1,298,516, equal, after allowing for preferred dividends and all charges to $1.07 on the 1,145,785 common shares outstanding. This compares with $1,117,636, for the similar period in 1952, equal, after preferred dividends and all charges to .90 per share.

Net sales for the 16 weeks were $33,235,294, as compared with $24,736,206 in the like period a year ago.

ONLY NASH VACUUM PUMPS HAVE ALL THESE FEATURES
One Moving Element. Non-pulsating Vacuum.
No Internal Parts In Wearing Contact. No Internal Lubrication. Handles Liquid With Air.
No Expert Attendance. Constant Efficiency.
Low Maintenance Cost.
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PAPER MILL

NASH ENGINEERING COMPANY
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EQUIPMENT & SUPPLY COMPANY NEWS

NATIONAL DISTILLERS CHEMICAL CO., State Road, Ashtabula, O., has released a technical bulletin, Pulp Bleaching No. 201, describing a new process for the bleaching of kraft pulp with sodium peroxide.

F. C. HUYCK & SONS, Rensselaer, N.Y., announces a large engineering staff to provide liaison between paper mills and their organization. Headed by Irving H. Peters, the department includes: George H. Gill, III; Warren C. Naugler; William E. French; John C. Spicer; and John P. LaRue.

HOOKER ELECTROCHEMICAL CO., announces it will start shipping liquid caustic soda and liquid chlorine from its new plant at Montague, Mich., starting Jan. 1, 1954.

SPROUT, WALDRON & CO., INC., Muncy, Pa., has released technical bulletin 92, "High Yield Kraft Pulping—A Process Study."

LIFT TRUCKS, INC., 2425 Spring Grove Ave., Cincinnati 14, O., has issued the new #35 Lift Trucks, Inc. Catalog. Free copies will be mailed on request.

INSUL-MASTIC CORP. OF AMERICA, 1141 Oliver Bldg., Pittsburgh 22, Pa., has contracted with the M. H. Ellis Co. of Memphis, Tenn., to sell and apply Insul-Mastic coatings in the Memphis area.

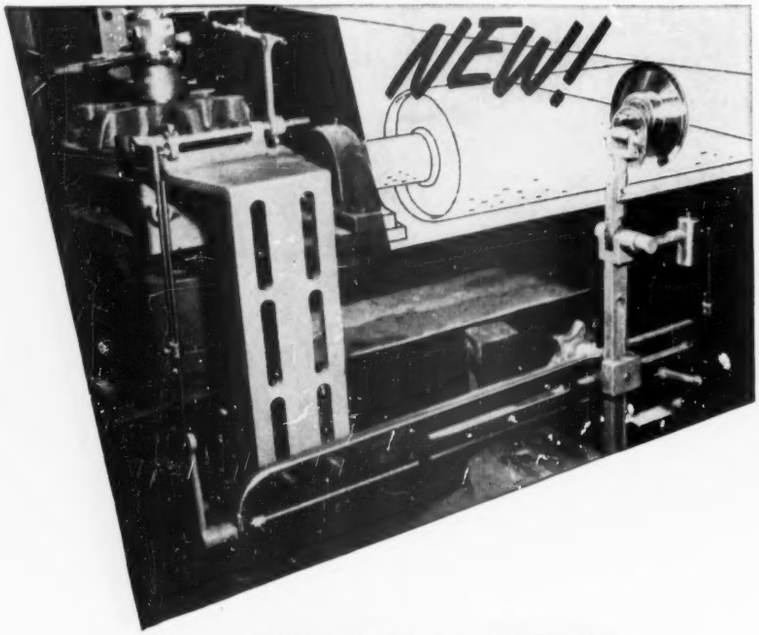
COCHRANE CORP., 17th St., Philadelphia 32, Pa., has released a handbook, Bulletin 5800, explaining the principles of ion exchange. Copies may be obtained on request.

THE BRISTOL CO., Waterbury, Conn., announces publication of its new issue of "Pyrometer Thermocouple Calibration Data." These new tables are based on data recently released by The National Bureau of Standards, and are available by writing The Bristol Co.

THE BLACK-CLAWSON CO., Dilts Machine Works Div., Fulton, N.Y., announces the availability of a new machine for continuously winding small diameter rolls which has been developed by The Crystal Waxing Co., a subsidiary of The Crystal Tissue Co., Middletown, O.

F. C. HUYCK & SONS, Rensselaer, N.Y., describe treatment for prevention of bacteria damage in a new book on "Dewpruf," a chemical for permanent protection of paper mill felts. The book tells how to detect presence of wool-destroying bacteria, and indicates that the chemical treatment, which is applied during manufacture, protects felts during operation or storage, and helps prevent edge-cracking. Copies are available from the company.

GENERAL ELECTRIC CO. has released an 8-page bulletin explaining the "two-point" and "proportional" register systems used on slitting, rewinding, side-trimming and printing operations. A photoelectric scanner on the edge of the paper web or register line causes a change in signal voltage when the web moves out of position which motivates a correction motor to bring it immediately back into position. Copies of the bulletin may be obtained from the company at Schenectady 5, N.Y.



The GILBERT & NASH

Rotary Palm Blade for Wire Service*

New Rotary Palm Blade for wire service is engineered to travel true *without wobbling or shimmying.* This basic improvement extends life of the blade, prolongs life of wire edge. Unit features SKF 6201Z sealed bearing and is adaptable to present palm assemblies. Write our representative for more facts today . . . you'll find it a rewarding experience.

*patent applied for

GILBERT and NASH company

APPLETON, WISCONSIN

Personals

CANADIAN NOTES

CLAUDE COWIE, former assistant mill manager at Abitibi Power & Paper Co.'s Iroquois Falls division, has been made assistant manager of Ste. Anne Paper Co. at Beaupre, Que.

H. R. MacMILLAN, chairman of the board, MacMillan at Blo del, Ltd., with pulp mills at Harmac and Po.. Alberni, has returned from a business trip to the United Kingdom.

L. L. G. BENTLEY, president of Howe Sound Pulp Co., whose mill is located at Port Mellon, B. C., has returned from Europe where he studied market conditions.

K. W. MATHESON, assistant to the general manager, Fraser Companies, Edmundston, N. B., has been elected a member of the executive council of the Canadian Mfrs. Assn.

ROBERT J. FILBERG has succeeded *H. J. MACKIN* as president of Canadian Western Lumber Co., Vancouver, B. C., as a sequel to the merger of that company with Crown Zellerbach Corp., and Mr. Mackin became a director of C-Z and continues as its advisor on Canadian operations. Both Mr. Mackin and Mr. Filberg have been on the board of Elk Falls Co., C-Z subsidiary.

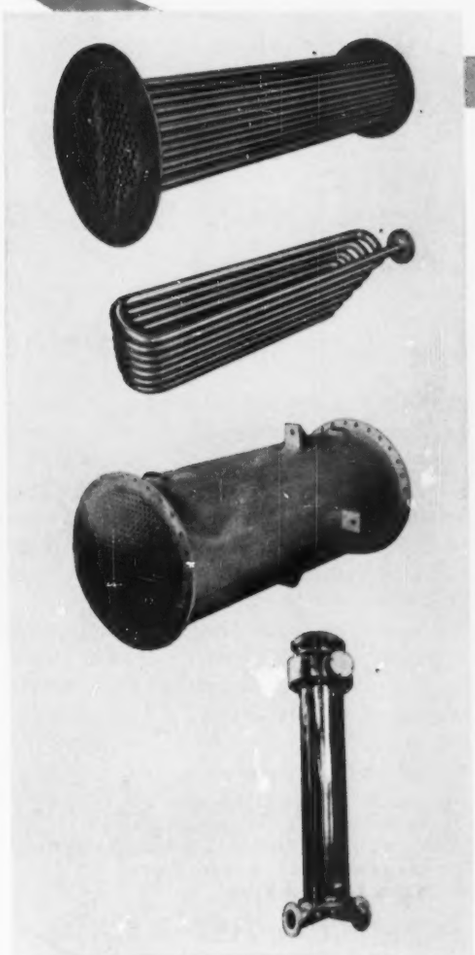
JAMES C. SHEASGREEN, formerly manager of Comox Logging & Railway Co., principal supplier of its associate Elk Falls Co. with raw material, has been appointed vice president and director of Canadian Western Lumber Co.

C. J. WARWICK FOX, Montreal, has been appointed vice president and manager, Great Lakes Paper Co., and will be top executive of the organization at Fort William, Ont. President *W. EARL ROWE* continues to make his headquarters in Toronto. Mr. Fox is a brother of *PERCY FOX*, president of St. Lawrence Corp.

When the Heat's On*

Exchangers Stay on the Line LONGER

...with *Carpenter* Stainless Tubing



At the left are pictured a group of heat exchangers and heaters in service on widely diverse jobs, in all parts of the country. They have one thing in common —the Carpenter Stainless Tubing that keeps them on the line longer—*when the heat's on for production.

Modern process equipment like this has to stay on the job. You can't afford to interrupt a process for hours or days to replace tubes.

That's why—after considering many sources—more and more orders call for Carpenter Stainless Tubing. They know that the quality standards we set at the mill will safeguard the quality reputation of their equipment.

Analysis, Tolerance and Finish are guaranteed to be "as ordered" on every shipment of Carpenter Stainless Tubing.

Send for this USEFUL SLIDE CHART

Physical properties, sizes and gauges, cross-sectional areas, velocity constants, pressures, weights and other technical data on Carpenter Stainless Tubing for heat exchanger applications are condensed into this handy chart. It's yours for the asking, on your company letterhead.

The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.
"CARSTEELCO"

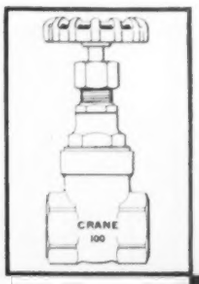
Carpenter

STAINLESS TUBING & PIPE

Analysis · Tolerance · Finish

- guaranteed on every shipment

NEW* brass gate valves by CRANE



No. 410,
100-Pound

No. 438,
125-Pound

No. 437,
150-Pound

* NEW SHAPE... NEW STRENGTH

for 3 All-Time CRANE *favorites*

Here are valves that didn't have to be changed . . . because each has long been the best in its class. But Crane found ways of improvement to give you an even better buy for your brass valve dollars.

For example—here is greater strength, greater rigidity, made possible by the new cylindrical upper body . . . the same basic shape as high-pressure steel valves. Here, too, is an improved stuffing box that screws *into* the bonnet—also better stem support to assure truer alignment and minimize wear on the packing.

And not to be overlooked is their clean, modern appearance—a very desirable advantage for all of your "exposed" installations. Sizes ¼ to 3 in. Ask your Crane Representative all about this improved brass valve line next time he calls.

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new four-page folder with complete facts including sizes, prices and dimensions. Send for yours today. Ask for Brass Valve Folder AD1944.

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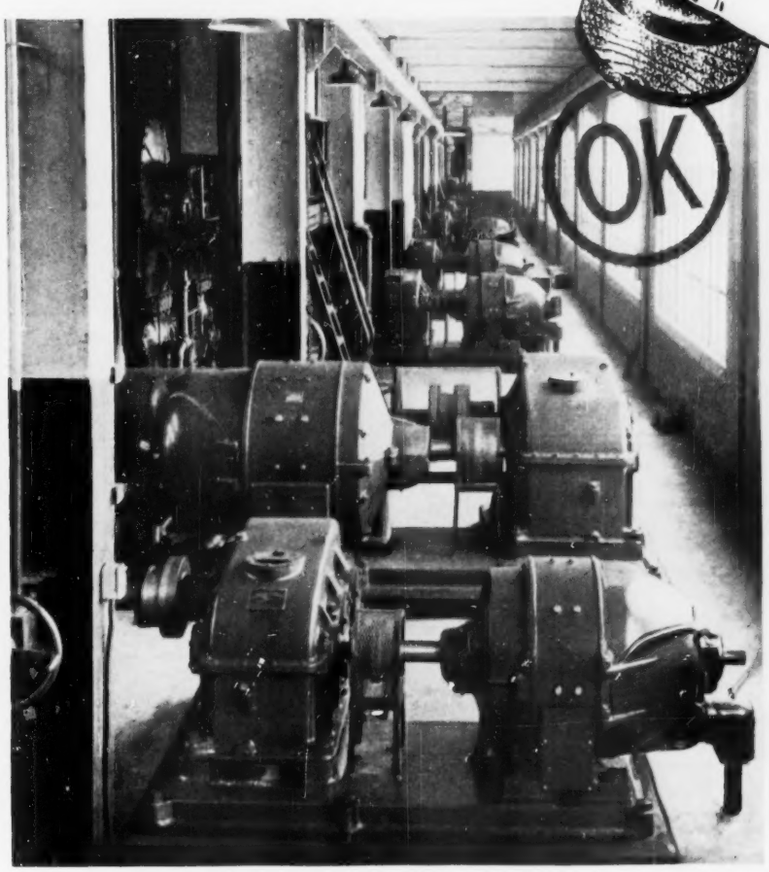
REPEAT ORDERS

tell the story of FARREL® SPEED REDUCERS



The many repeat orders, received each year, put the stamp of approval on Farrel speed reducers for paper mill service.

For example, Farrel units were selected for the first paper machine installed in a new southern kraft mill. Because of their highly satisfactory performance, additional units were installed as new paper machines were added. Today, there are eighty Farrel speed reducers in this one mill.

Another mill had eighteen Farrel units in operation. When additional paper-making capacity was required, seventeen more units were ordered.

In all, Farrel has supplied over 350 speed reducers to the paper industry in the last half dozen years. These units are transmitting a total of 25,000 HP to all types of paper machine rotating elements.

The success of Farrel speed reducers is a story of expert engineering and design flexibility. Unlike most "standardized" products, these units are standard only in their principal features. They can be adapted in critical detail.

For technical details of these *mill-proved* units, send for a copy of Bulletin 449.

OTHER FARREL PRODUCTS

In addition to speed reducers, Farrel also makes a number of other products for the paper mill, including chilled and alloy iron rolls for paper, board, glassine and super calenders, breaker stacks, smoothing presses, etc. . . . machine calender stacks and board calenders . . . roll grinding machines . . . and roll calipers.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Boston, Akron, Detroit, Chicago, Memphis, Minneapolis, Portland (Oregon), Los Angeles, Salt Lake City, Tulsa, Houston, New Orleans

Farrel-Birmingham®

FB-861

SELF-DOCTORING TOPRESS ROLLS rubber covered by GRIFFITH of Portland

THE MOST ADVANCED DEVELOPMENT IN RESILIENT ROLL COVERINGS SINCE THE INTRODUCTION OF RUBBER COVERED SUCTION ROLLS

The Self-Doctoring Topress rolls covered by GRIFFITH will not pick the sheet because a special improved rubber cover compound is used. Breaks in the sheet contacting the Topress Rolls are eliminated. Doctor Blades may be entirely removed from the machine—or their use discontinued.

With the installation of GRIFFITH Self-Doctoring Topress Rolls on an open top press, you gain the advantage of resilient rolls of the hardness required for best operation. This gives better water removal at higher speeds, plus much longer felt life.

Write, Wire or Telephone for Estimate on Your Job

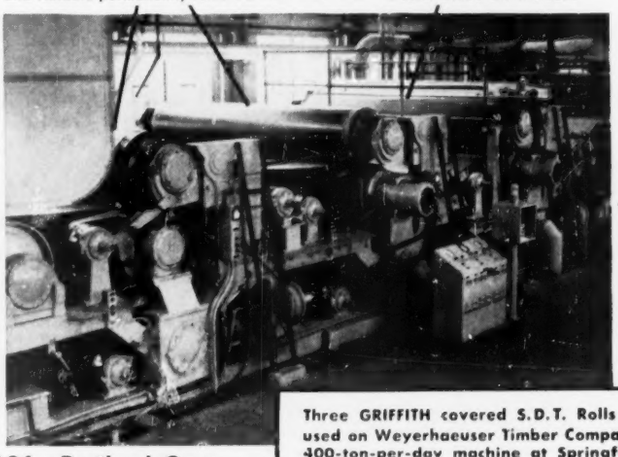
Griffith RUBBER MILLS

2439 N. W. 22nd Ave. • Phone: BEacon 7126 • Portland, Ore.

Western Industrial Rubber Specialists Since 1911

SECOND & THIRD PRESSES—GRIFFITH covered Self-Doctoring Topress Rolls with Doctor Blades and Holders permanently removed from machine.

FIRST PRESS—GRIFFITH covered Self-Doctoring Topress Roll with Doctor Blade off the roll.



Three GRIFFITH covered S.D.T. Rolls are used on Weyerhaeuser Timber Company's 400-ton-per-day machine at Springfield, Oregon, running at 1,200 ft. per minute.

HERMANN *Improved* CLAFLIN

"Continuous Beater & Refiner"

"Continuous" Beating-Refining Kraft Pulps for Multiwall Bag, Gumming & Kraft Specialties.

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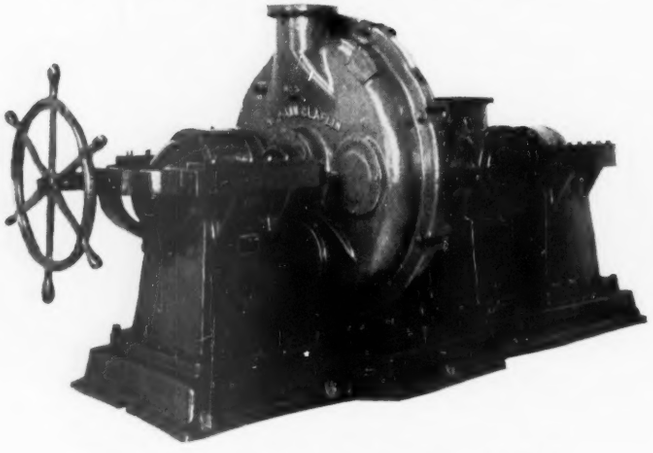


"Hot Brown Stock" Blow Tank to CLAFLIN direct to the Washers

"Asplund Fibre" .009 Corrugating

"Chemipulper" "Defibrator Stock" Roofing Felt

"Neutral Sulphite" .009 Corrugating

"Knotter-Screen Rejects"

Straw-Bagasse

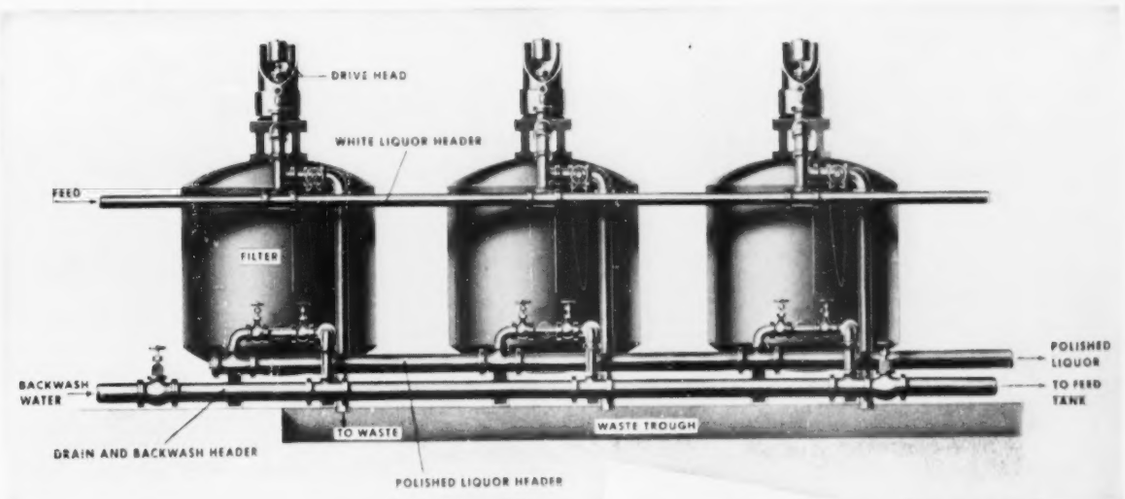
Four Size Units Including No. 0 For Laboratory-Test Purposes.

NOW AVAILABLE: NEW NO. 3 HEAVY DUTY UNIT WITH TANGENT HEAD-VOLUTE INLET. FOR DEFIBERING HOT BROWN STOCK. REQUIRES LESS THAN 1-H.P. PER TON.

THE HERMANN MFG. CO. LANCASTER, OHIO

What's New in Recausticizing Practice?

The DORRCO White Liquor Polishing Station



Designed to fit in as an integral part of new or existing Dorr Continuous Recausticizing Systems, the White Liquor Polishing Station consists of one or more vertical pressure filters and all necessary piping, valves and control instruments. While this development is of particular importance to producers of bleached and dissolving pulps, the assurance of a cooking liquor of uniform purity and clarity is of interest to every producer in terms of better overall operation.

For further information on the Dorrco White Liquor Polishing Station, write The Dorr Company, Stamford, Conn., or in Canada, The Dorr Company, 26 St. Clair Avenue East, Toronto 5.

Facts on the DORRCO White Liquor Polishing Station

Filtering medium of graded anthracite coal entraps colloidal material too fine to be removed economically by gravity.

A uniformly bright pulp is assured regardless of variations in settling and slaking conditions in the recausticizing operation.

A built-in, motor-driven agitator operated during backwashing aids in releasing entrained impurities, breaks up the film of impurities on the surface of the bed and maintains the anthracite bed in good condition.

Exceptionally long filter runs are obtained . . . up to 24 operating hours; with short, 10-20 minute backwashing cycles.

Better tools TODAY to meet tomorrow's demand

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WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

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Mill at Port Alberni

BLOEDEL SUPERTARE KRAFT

Mill near Nanaimo

HARMAC BLEACHED SULPHATE

Two great mills, producing bleached and unbleached Sulphate pulp, provide a reliable open market supply for discriminating buyers.

The "brightness" of HARMAC pulp with the chlorine dioxide system of bleaching, and the "cleanliness" of BLOEDEL KRAFT, are features that contribute to the popularity of these products in world markets.

Rail and deep sea facilities at both mills.

MacMILLAN & BLOEDEL LTD.
837 West Hastings Street, Vancouver 1, Canada

COATED

LEDGER

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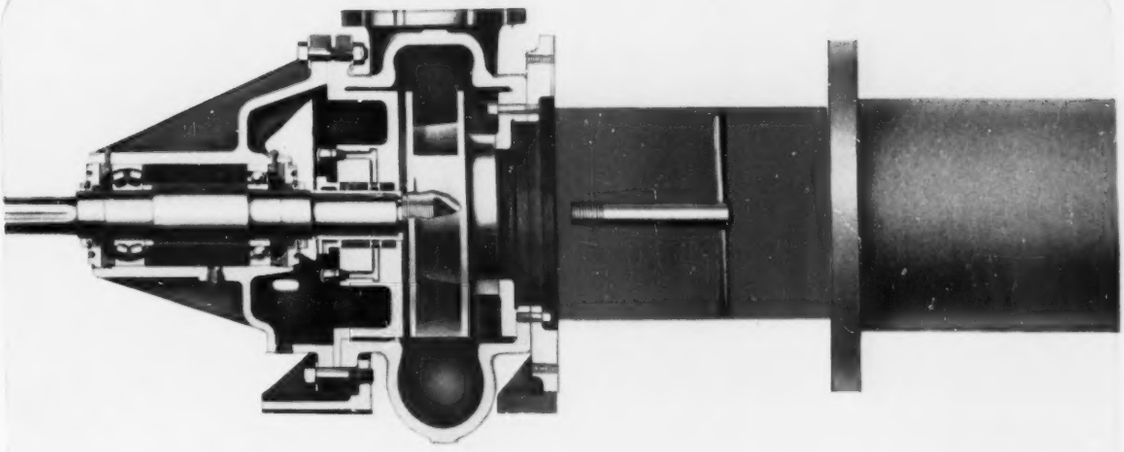
FOR USE IN THE MAKING OF HIGH-GRADE PAPERS AND BOARDS

CLINTON FOODS INC.
Corn Processing Division
CLINTON, IOWA

Relieves Suction Problems in Pumping Heavy Stocks



PW Pump with 16 inch Suction + **Feeder Vane Assembly** + **Large Suction Piping**

STOCKS UP TO 6% HANDLED WITH EASE; HEAVIER STOCKS UNDER SOME CONDITIONS

YOUR SUCTION PROBLEMS in handling heavy stocks can be greatly reduced by the use of an Allis-Chalmers Paper Stock Pump with 16 inch suction opening. This means that you can take full advantage of the economy of handling stock at the highest possible consistence.

Increased NPSH

Allis-Chalmers has developed a paper stock pump with a full 16 inch suction opening for discharge openings from 4 to 12 inches. This means absolute minimum friction loss right up to the eye of the impeller. Available Net Positive Suction Head is increased. In addition, a feeder vane assembly is available to further improve suction conditions. The action of the feeder vane as it rotates with the impeller moves the stock into the eye of the impeller, increasing the NPSH at this critical point.

Handles 6% Stock

With the feeder vane assembly, this Allis-Chalmers Paper Stock Pump is successfully handling stock up to 6% consistence, and under favorable conditions even heavier stocks.

For information on how this pump can help you, and the assistance of an experienced paper mill pump engineer, get in touch with your Allis-Chalmers District Office or write for Bulletin 52B7112. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3905

ALLIS-CHALMERS

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BLEACHED SULPHITE PULP

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for the manufacture of Cellophane, Rayon and Products of Paper.

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RESTIGOUCHE COMPANY, LTD.
Campbellton, N. B., Canada

a Specialized Service

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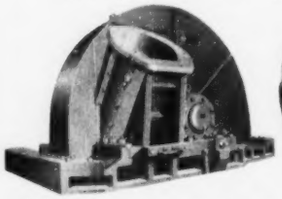
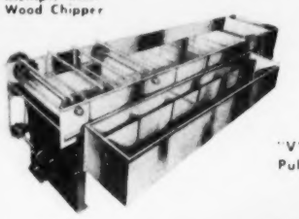
To the paper industry we offer a specialized service including engineering, pattern making, modern machine shop facilities and foundry operations — all top quality because of our over 70 years' close association with the needs of paper manufacturers. No obligation for complete details and engineering recommendations.

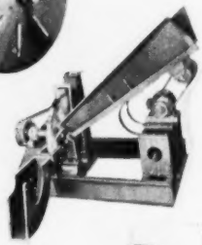


MURCO Multiple Knife Discs

MURCO Multiple Knife Wood Chipper

MURCO Rechipper



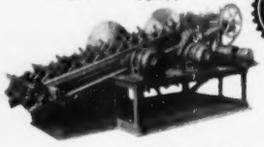


MURCO "V" Type, Spout For Pulpwood Chippers

MURCO Stainless Steel Flat Screen

MURCO Barking Drum

MURCO Quick Opening Gate Valves



MURCO Pulp Wood Slasher

MURCO Roll Heading Machine

Write for complete details, or ask our West Coast representative, Dan E. Charles Agency, 607 Jones Building, Seattle, Washington for more information.

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- KNOT DRILL
- DOUBLE-DECK CHIP SCREEN
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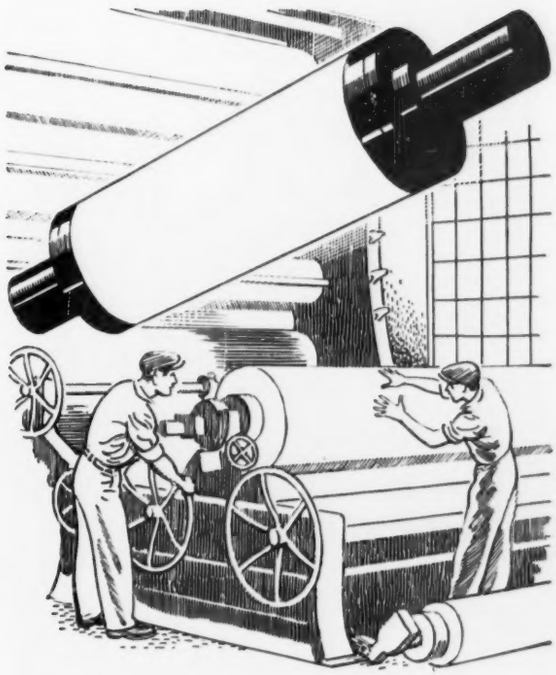
WAUSAU MANUFACTURERS SINCE 1883 WISCONSIN



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Your calender stacks are your final chance for top quality. That's where Butterworth Calender Rolls give you the smooth, uniform finish that is the hallmark of a quality sheet.

Make this simple test. Place one Butterworth Calender Roll in your stack with any other roll or set of rolls. Compare its uniform high-quality calendering. Then check the extra hours of trouble-free service, without requiring turning down or refilling.

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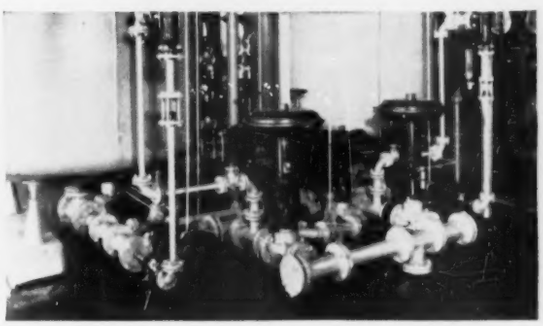
Butterworth
CALENDER ROLLS

CORROSIVE LIQUIDS CAN'T HURT THIS INSTALLATION

Large midwest corn processor installs SARAN lined pipe, fittings and valves



When one of the largest processors of corn in the midwest was faced with the problem of handling corrosive liquid safely and efficiently in an ion exchange system, they investigated saran lined pipe and fittings.

They learned that saran lined pipe, fittings and valves assure tight, leakproof joints. They were convinced that the excellent corrosion resistance of strong, rigid saran lined pipe would mean longer service and greater dependability. The sum total of advantages offered by saran lined pipe indicated that it would meet the company's demands for equipment that would assure uninterrupted processing free from the expense and inconvenience of unscheduled "shutdowns." Wherever piping with unusual resistance to most chemicals and solvents is involved, install saran lined steel pipe. It can be easily cut and threaded in the field without need for special tools or handling; costly downtime can be reduced to a minimum. We'll be glad to assist you with installation plans. Write or call the Saran Lined Pipe Company, Ferndale, Michigan. Offices in New York • Boston • Pittsburgh • Tulsa • Philadelphia Chicago • Portland • Indianapolis • San Francisco • Houston Denver • Los Angeles • Seattle • Cleveland • Charleston, S. C. Toronto • Montreal.

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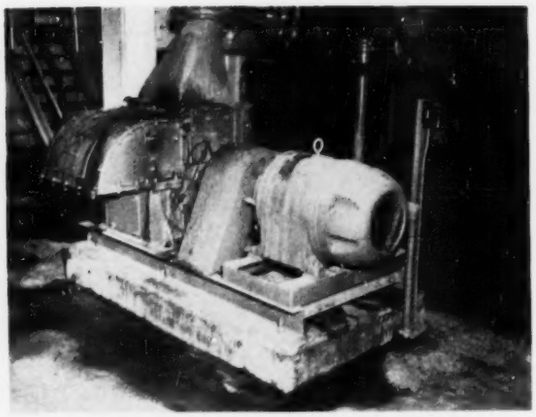

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TURBO SHREDDER INSTALLATION

FOR RECLAMATION AND REFINING OF KNOTS, SCREENINGS AND REJECTS

Will Serve Long, Well and Profitably

● The rugged Gruendler Turbo Shredder mechanically opens up tough fiber bundles and knots with little or no increase in fines. Tons of material previously considered unsuitable will be reclaimed . . . with the possibility of savings great enough to amortize the cost of the shredder in a few months.

Available in various sizes, the Gruendler Shredder operates on low horsepower, over a wide range of stock consistency and maintains almost peak efficiency for a much greater period than other types of refiners.

● **The Gruendler Crusher & Pulverizer Co. also manufactures Intensive Blenders, Lap Shredders, Knife Hogs, Hammermill Shredders, Turbo Pulp Refiners, Hot Lime Breakers, Salt Cake Pulverizers and Paper Shredders for the Pulp & Paper Industry. Before investing in any new equipment, inquire about the Gruendler line . . . you may find it extremely worthwhile.**

● **Laboratory and pilot plant facilities** are available to help work out your problems with no obligation.

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BLO-HOG

(The only all-purpose hog in the world)

Eats Up Everything!

Patents Pending

. . . including Pine, Oak, Gum, Hickory, Elm, Wet Veneer, Round-up and Sandy Bark. Conveyor-fed—no attendant required. Positively protected from major damage by tramp steel. All connections locked — nothing to shake loose. Maintenance costs unbelievably low.

". . . Dear Mr. Montgomery: It is an unbelievable machine and it is still hard to believe that it is actually handling the enormous volume of scrap we are feeding into it. We operate the hog without an attendant—which means a considerable saving.—J. B. Black, Plant Superintendent, Ocala Manufacturing, Ice and Packing Co., Ocala, Fla." C. I. T. Terms Available

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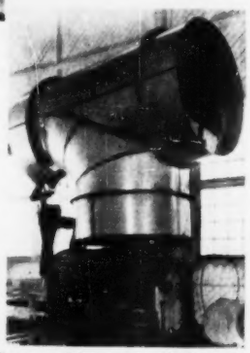
—If it's custom fabricated of metal up to one inch in thickness!

Shown at right is a typical example of PSSM custom plate fabrication for the pulp and paper industry—a 72-inch diameter stainless steel pipe fitting.



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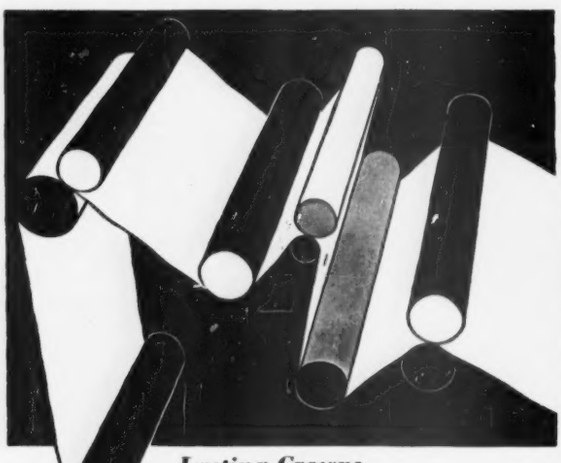

Lasting Crowns

MANHATTAN RUBBER COVERED ROLLS

More Use per Dollar

You save money on rolls and lower your production costs because Raybestos-Manhattan custom-covers roll cores to meet the special needs of your plant. Manhattan Rubber Covered Rolls hold their crowns longer and their density permanently, giving you uniform, trouble-free production. Call the R/M specialist next time you need rolls rubber covered.

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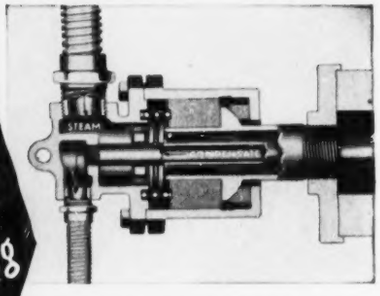
RM **RAYBESTOS-MANHATTAN, INC.**

MANHATTAN RUBBER DIVISION, PASSAIC, NEW JERSEY

New Johnson Self-Supporting Joint



The new Series 2000 Type S Johnson Joint . . . shifts as the roll shifts . . . ends threat of misalignment.

Better than ever because it weighs less, takes less room, costs less. Better because it has longer life, with newly designed carbon-graphite seal rings which give an average of 25% greater wear. Combines all the basic advantages that makes a Johnson Joint the best, most economical way to get steam in, condensate out of rotating rolls and drums: packless, self-lubricating and self-adjusting to varying pressures. Its simple design makes it easy to service or repair right in the field. The perfect answer for many jobs.

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849 Wood St., Three Rivers, Mich.

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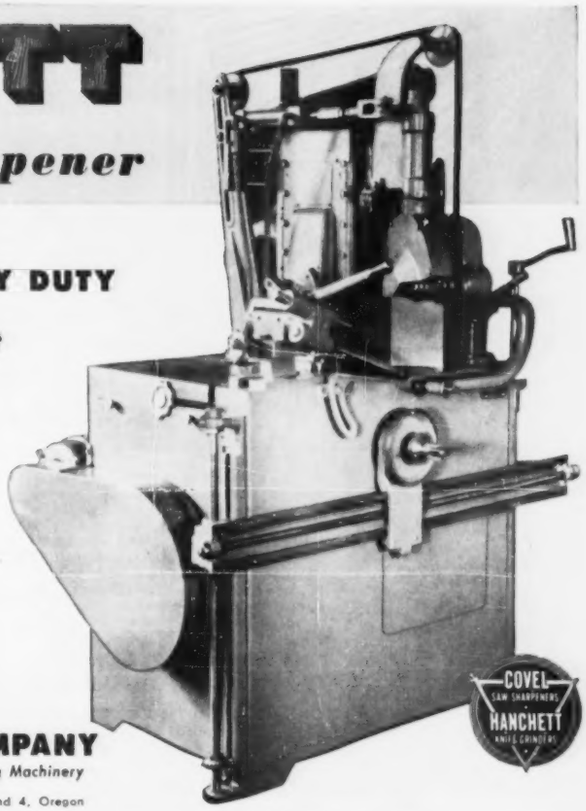

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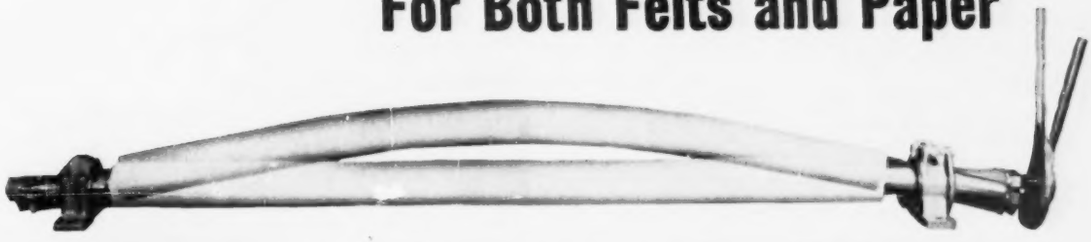

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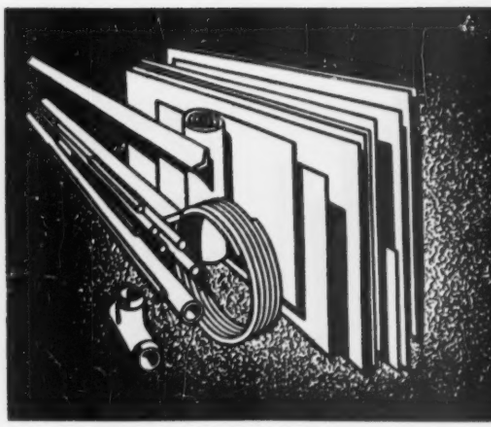

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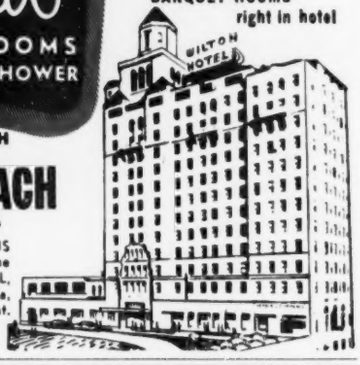

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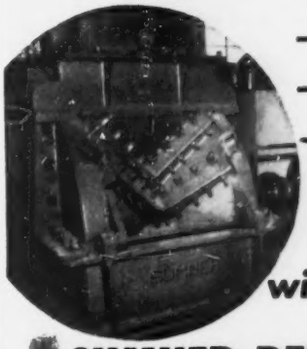

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